SEQUENCE LISTING

<110>   Ole THASTRUP
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        Kurt SCUDDER

<120>   A Method For Extracting Quantitative Information Relating To An
Influence On A Cellular Response

<130>   3759-0120P

<140>   10/072,036
<141>   2002-02-05

<150>   09/417,197

<151>   1999-10-07

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<223> Erk-1 Bottom/+Stop Primer

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<210> 11

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<223> Erk2-top Primer

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4

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<223> Erk2-bottom/+stop Primer

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<223> p38-top Primer

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<223> p38-bottom/-stop Primer

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<223>   Jnk-top Primer

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<223>   Jnk-bottom/+stop Primer
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<223> Smad2-top Primer

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<223>  Grk5-top Primer

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<223> StatS-top Primer

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<210> 31

<211> 31

<212> DNA

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<223> Stat5-bottom/-stop Primer

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gtggtaccca tgagagggag cctctggcag a   31

<210> 32

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<400> 32
gtggtacctc atgagaggga gcctctggca g   31

<210> 33

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<223> Smad4-top Primer

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<223>  Smad4-bottom/+stop Primer

<400>  35
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<210>  36

<211>  27

<212>  DNA

<213>  Artificial Sequence



<220>

<223>  PKB-top Primer

<400>  36
gtctcgaggc accatgagcg acgtggc                                   27


<210>  37

<211>  27
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<212> DNA

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<223> PKB-bottom/stop Primer

<400> 37
tgggatccga ggccgtgctg ctggccg   27

<210> 38

<211> 1896

<212> DNA

<213> Artificial Sequence

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<223> EGFP-Erk1 fusion construct

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<222> (1)..(1893)

<400> 38

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1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc        96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc       144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc       192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag       240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag       288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag       336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100                 105                 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc       384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
            115                 120                 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac       432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
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12

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            130                    135                    140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac    480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                    150                    155                160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc    528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                       165                    170                175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc    576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
                  180                    185                    190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg    624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
             195                    200                    205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc    672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
        210                    215                    220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc    720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                    230                    235                240
gga ctc aga tct cga gct caa gct tcg aat tca acc atg gcg gcg gcg    768
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Thr Met Ala Ala Ala
                  245                    250                    255
gcg gct cag ggg ggc ggg ggc ggg gag ccc cgt aga acc gag ggg gtc    816
Ala Ala Gln Gly Gly Gly Gly Gly Glu Pro Arg Arg Thr Glu Gly Val
             260                    265                    270
ggc ccg ggg gtc ccg ggg gag gtg gag atg gtg aag ggg cag ccg ttc    864
Gly Pro Gly Val Pro Gly Glu Val Glu Met Val Lys Gly Gln Pro Phe
             275                    280                    285
gac gtg ggc ccg cgc tac acg cag ttg cag tac atc ggc gag ggc gcg    912
Asp Val Gly Pro Arg Tyr Thr Gln Leu Gln Tyr Ile Gly Glu Gly Ala
        290                    295                    300
tac ggc atg gtc agc tcg gcc tat gac cac gtg cgc aag act cgc gtg    960
Tyr Gly Met Val Ser Ser Ala Tyr Asp His Val Arg Lys Thr Arg Val
305                    310                    315                320
gcc atc aag aag atc agc ccc ttc gaa cat cag acc tac tgc cag cgc   1008
Ala Ile Lys Lys Ile Ser Pro Phe Glu His Gln Thr Tyr Cys Gln Arg
                  325                    330                    335
acg ctc cgg gag atc cag atc ctg ctg cgc ttc cgc cat gag aat gtc   1056
Thr Leu Arg Glu Ile Gln Ile Leu Leu Arg Phe Arg His Glu Asn Val
                  340                    345                    350
atc ggc atc cga gac att ctg cgg gcg tcc acc ctg gaa gcc atg aga   1104
Ile Gly Ile Arg Asp Ile Leu Arg Ala Ser Thr Leu Glu Ala Met Arg
             355                    360                    365
gat gtc tac att gtg cag gac ctg atg gag act gac ctg tac aag ttg   1152
Asp Val Tyr Ile Val Gln Asp Leu Met Glu Thr Asp Leu Tyr Lys Leu
        370                    375                    380
ctg aaa agc cag cag ctg agc aat gac cat atc tgc tac ttc ctc tac   1200
Leu Lys Ser Gln Gln Leu Ser Asn Asp His Ile Cys Tyr Phe Leu Tyr
385                    390                    395                400
cag atc ctg cgg ggc ctc aag tac atc cac tcc gcc aac gtg ctc cac   1248
Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser Ala Asn Val Leu His
                  405                    410                    415
cga gat cta aag ccc tcc aac ctg ctc agc aac acc acc tgc gac ctt   1296
Arg Asp Leu Lys Pro Ser Asn Leu Leu Ser Asn Thr Thr Cys Asp Leu
                  420                    425                    430
aag att tgt gat ttc ggc ctg gcc cgg att gcc gat cct gag cat gac   1344
Lys Ile Cys Asp Phe Gly Leu Ala Arg Ile Ala Asp Pro Glu His Asp
             435                    440                    445
cac acc ggc ttc ctg acg gag tat gtg gct acg cgc tgg tac cgg gcc   1392
His Thr Gly Phe Leu Thr Glu Tyr Val Ala Thr Arg Trp Tyr Arg Ala
        450                    455                    460
cca gag atc atg ctg aac tcc aag ggc tat acc aag tcc atc gac atc   1440
Pro Glu Ile Met Leu Asn Ser Lys Gly Tyr Thr Lys Ser Ile Asp Ile
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13

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465                      470                      475                      480
tgg tct gtg ggc tgc att ctg gct gag atg ctc tct aac cgg ccc atc          1488
Trp Ser Val Gly Cys Ile Leu Ala Glu Met Leu Ser Asn Arg Pro Ile
            485                      490                      495
ttc cct ggc aag cac tac ctg gat cag ctc aac cac att ctg ggc atc          1536
Phe Pro Gly Lys His Tyr Leu Asp Gln Leu Asn His Ile Leu Gly Ile
            500                      505                      510
ctg ggc tcc cca tcc cag gag gac ctg aat tgt atc atc aac atg aag          1584
Leu Gly Ser Pro Ser Gln Glu Asp Leu Asn Cys Ile Ile Asn Met Lys
            515                      520                      525
gcc cga aac tac cta cag tct ctg ccc tcc aag acc aag gtg gct tgg          1632
Ala Arg Asn Tyr Leu Gln Ser Leu Pro Ser Lys Thr Lys Val Ala Trp
            530                      535                      540
gcc aag ctt ttc ccc aag tca gac tcc aaa gcc ctt gac ctg ctg gac          1680
Ala Lys Leu Phe Pro Lys Ser Asp Ser Lys Ala Leu Asp Leu Leu Asp
545                      550                      555                      560
cgg atg tta acc ttt aac ccc aat aaa cgg atc aca gtg gag gaa gcg          1728
Arg Met Leu Thr Phe Asn Pro Asn Lys Arg Ile Thr Val Glu Glu Ala
                565                      570                      575
ctg gct cac ccc tac ctg gag cag tac tat gac ccg acg gat gag cca          1776
Leu Ala His Pro Tyr Leu Glu Gln Tyr Tyr Asp Pro Thr Asp Glu Pro
            580                      585                      590
gtg gcc gag gag ccc ttc acc ttc gcc atg gag ctg gat gac cta cct          1824
Val Ala Glu Glu Pro Phe Thr Phe Ala Met Glu Leu Asp Asp Leu Pro
            595                      600                      605
aag gag cgg ctg aag gag ctc atc ttc cag gag aca gca cgc ttc cag          1872
Lys Glu Arg Leu Lys Glu Leu Ile Phe Gln Glu Thr Ala Arg Phe Gln
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ccc gga gtg ctg gag gcc ccc tag                                          1896
Pro Gly Val Leu Glu Ala Pro
625                      630
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<211> 631

<212> PRT

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<223> EGFP-Erk1 fusion construct

<400> 39

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            20                  25                  30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35                  40                  45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50                  55                  60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100                 105                 110
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14

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Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115                 120                 125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                 135                 140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                     150                 155                 160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195                 200                 205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
        210                 215                 220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Thr Met Ala Ala Ala
                245                 250                 255
Ala Ala Gln Gly Gly Gly Gly Gly Glu Pro Arg Arg Thr Glu Gly Val
            260                 265                 270
Gly Pro Gly Val Pro Gly Glu Val Glu Met Val Lys Gly Gln Pro Phe
        275                 280                 285
Asp Val Gly Pro Arg Tyr Thr Gln Leu Gln Tyr Ile Gly Glu Gly Ala
        290                 295                 300
Tyr Gly Met Val Ser Ser Ala Tyr Asp His Val Arg Lys Thr Arg Val
305                 310                 315                 320
Ala Ile Lys Lys Ile Ser Pro Phe Glu His Gln Thr Tyr Cys Gln Arg
                325                 330                 335
Thr Leu Arg Glu Ile Gln Ile Leu Leu Arg Phe Arg His Glu Asn Val
                340                 345                 350
Ile Gly Ile Arg Asp Ile Leu Arg Ala Ser Thr Leu Glu Ala Met Arg
            355                 360                 365
Asp Val Tyr Ile Val Gln Asp Leu Met Glu Thr Asp Leu Tyr Lys Leu
        370                 375                 380
Leu Lys Ser Gln Gln Leu Ser Asn Asp His Ile Cys Tyr Phe Leu Tyr
385                 390                 395                 400
Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser Ala Asn Val Leu His
                405                 410                 415
Arg Asp Leu Lys Pro Ser Asn Leu Leu Ser Asn Thr Thr Cys Asp Leu
                420                 425                 430
Lys Ile Cys Asp Phe Gly Leu Ala Arg Ile Ala Asp Pro Glu His Asp
        435                 440                 445
His Thr Gly Phe Leu Thr Glu Tyr Val Ala Thr Arg Trp Tyr Arg Ala
        450                 455                 460
Pro Glu Ile Met Leu Asn Ser Lys Gly Tyr Thr Lys Ser Ile Asp Ile
465                 470                 475                 480
Trp Ser Val Gly Cys Ile Leu Ala Glu Met Leu Ser Asn Arg Pro Ile
                485                 490                 495
Phe Pro Gly Lys His Tyr Leu Asp Gln Leu Asn His Ile Leu Gly Ile
            500                 505                 510
Leu Gly Ser Pro Ser Gln Glu Asp Leu Asn Cys Ile Ile Asn Met Lys
        515                 520                 525
Ala Arg Asn Tyr Leu Gln Ser Leu Pro Ser Lys Thr Lys Val Ala Trp
        530                 535                 540
Ala Lys Leu Phe Pro Lys Ser Asp Ser Lys Ala Leu Asp Leu Leu Asp
545                 550                 555·                560
Arg Met Leu Thr Phe Asn Pro Asn Lys Arg Ile Thr Val Glu Glu Ala
                565                 570                 575
Leu Ala His Pro Tyr Leu Glu Gln Tyr Tyr Asp Pro Thr Asp Glu Pro
            580                 585                 590
Val Ala Glu Glu Pro Phe Thr Phe Ala Met Glu Leu Asp Asp Leu Pro
        595                 600                 605
Lys Glu Arg Leu Lys Glu Leu Ile Phe Gln Glu Thr Ala Arg Phe Gln
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Pro Gly Val Leu Glu Ala Pro
625                   630


<210>  40

<211>  1818

<212>  DNA

<213>  Artificial Sequence


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<223>  EGFP-Erk2 fusion

<220>

<221>  CDS

<222>  (1)..(1815)


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1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc      96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc     144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc     192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag     240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag     288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag     336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100                 105                 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc     384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
            115                 120                 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac     432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                 135                 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac     480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc     528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc     576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
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16

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                    180                      185                      190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg    624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195                      200                      205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc    672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
        210                      215                      220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc    720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                      230                      235                      240
gga ctc aga tct cga gta acc atg gcg gcg gcg gcg gcg gcg ggc ccg    768
Gly Leu Arg Ser Arg Val Thr Met Ala Ala Ala Ala Ala Ala Gly Pro
                        245                      250                      255
gag atg gtc cgc ggg cag gtg ttc gac gtg ggg ccg cgc tac act aat    816
Glu Met Val Arg Gly Gln Val Phe Asp Val Gly Pro Arg Tyr Thr Asn
        260                      265                      270
ctc tcg tac atc gga gaa ggc gcc tac ggc atg gtt tgt tct gct tat    864
Leu Ser Tyr Ile Gly Glu Gly Ala Tyr Gly Met Val Cys Ser Ala Tyr
        275                      280                      285
gat aat ctc aac aaa gtt cga gtt gct atc aag aaa atc agt cct ttt    912
Asp Asn Leu Asn Lys Val Arg Val Ala Ile Lys Lys Ile Ser Pro Phe
        290                      295                      300
gag cac cag acc tac tgt cag aga acc ctg aga gag ata aaa atc cta    960
Glu His Gln Thr Tyr Cys Gln Arg Thr Leu Arg Glu Ile Lys Ile Leu
305                      310                      315                      320
ctg cgc ttc aga cat gag aac atc atc ggc atc aat gac atc atc cgg    1008
Leu Arg Phe Arg His Glu Asn Ile Ile Gly Ile Asn Asp Ile Ile Arg
                        325                      330                      335
gca cca acc att gag cag atg aaa gat gta tat ata gta cag gac ctc    1056
Ala Pro Thr Ile Glu Gln Met Lys Asp Val Tyr Ile Val Gln Asp Leu
        340                      345                      350
atg gag aca gat ctt tac aag ctc ttg aag aca cag cac ctc agc aat    1104
Met Glu Thr Asp Leu Tyr Lys Leu Leu Lys Thr Gln His Leu Ser Asn
        355                      360                      365
gat cat atc tgc tat ttt ctt tat cag atc ctg aga gga tta aag tat    1152
Asp His Ile Cys Tyr Phe Leu Tyr Gln Ile Leu Arg Gly Leu Lys Tyr
        370                      375                      380
ata cat tca gct aat gtt ctg cac cgt gac ctc aag cct tcc aac ctc    1200
Ile His Ser Ala Asn Val Leu His Arg Asp Leu Lys Pro Ser Asn Leu
385                      390                      395                      400
ctg ctg aac acc act tgt gat ctc aag atc tgt gac ttt ggc ctt gcc    1248
Leu Leu Asn Thr Thr Cys Asp Leu Lys Ile Cys Asp Phe Gly Leu Ala
                        405                      410                      415
cgt gtt gca gat cca gac cat gat cat aca ggg ttc ttg aca gag tat    1296
Arg Val Ala Asp Pro Asp His Asp His Thr Gly Phe Leu Thr Glu Tyr
                        420                      425                      430
gta gcc acg cgt tgg tac aga gct cca gaa att atg ttg aat tcc aag    1344
Val Ala Thr Arg Trp Tyr Arg Ala Pro Glu Ile Met Leu Asn Ser Lys
        435                      440                      445
ggt tat acc aag tcc att gat att tgg tct gtg ggc tgc atc ctg gca    1392
Gly Tyr Thr Lys Ser Ile Asp Ile Trp Ser Val Gly Cys Ile Leu Ala
        450                      455                      460
gag atg cta tcc aac agg cct atc ttc cca gga aag cat tac ctt gac    1440
Glu Met Leu Ser Asn Arg Pro Ile Phe Pro Gly Lys His Tyr Leu Asp
465                      470                      475                      480
cag ctg aat cac atc ctg ggt att ctt gga tct cca tca cag gaa gat    1488
Gln Leu Asn His Ile Leu Gly Ile Leu Gly Ser Pro Ser Gln Glu Asp
                        485                      490                      495
ctg aat tgt ata ata aat tta aaa gct aga aac tat ttg ctt tct ctc    1536
Leu Asn Cys Ile Ile Asn Leu Lys Ala Arg Asn Tyr Leu Leu Ser Leu
        500                      505                      510
ccg cac aaa aat aag gtg ccg tgg aac agg ttg ttc cca aac gct gac    1584
Pro His Lys Asn Lys Val Pro Trp Asn Arg Leu Phe Pro Asn Ala Asp
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17

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              515                          520                          525
tcc aaa gct ctg gat tta ctg gat aaa atg ttg aca ttt aac cct cac       1632
Ser Lys Ala Leu Asp Leu Leu Asp Lys Met Leu Thr Phe Asn Pro His
        530                          535                          540
aag agg att gaa gtt gaa cag gct ctg gcc cac ccg tac ctg gag cag       1680
Lys Arg Ile Glu Val Glu Gln Ala Leu Ala His Pro Tyr Leu Glu Gln
545                          550                          555                          560
tat tat gac cca agt gat gag ccc att gct gaa gca cca ttc aag ttt       1728
Tyr Tyr Asp Pro Ser Asp Glu Pro Ile Ala Glu Ala Pro Phe Lys Phe
                    565                          570                          575
gac atg gag ctg gac gac tta cct aag gag aag ctc aaa gaa ctc att       1776
Asp Met Glu Leu Asp Asp Leu Pro Lys Glu Lys Leu Lys Glu Leu Ile
            580                          585                          590
ttt gaa gag act gct cga ttc cag cca gga tac aga tct taa             1818
Phe Glu Glu Thr Ala Arg Phe Gln Pro Gly Tyr Arg Ser
        595                          600                          605


<210>    41

<211>    605

<212>    PRT

<213>    Artificial Sequence



<220>

<223>    EGFP-Erk2 fusion


<400>    41

Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1                5                   10                  15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20                  25                  30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35                  40                  45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50                  55                  60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100                 105                 110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115                 120                 125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130                 135                 140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195                 200                 205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                 215                 220
```

18

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Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225             230             235             240
Gly Leu Arg Ser Arg Val Thr Met Ala Ala Ala Ala Ala Ala Gly Pro
            245             250             255
Glu Met Val Arg Gly Gln Val Phe Asp Val Gly Pro Arg Tyr Thr Asn
            260             265             270
Leu Ser Tyr Ile Gly Glu Gly Ala Tyr Gly Met Val Cys Ser Ala Tyr
            275             280             285
Asp Asn Leu Asn Lys Val Arg Val Ala Ile Lys Lys Ile Ser Pro Phe
            290             295             300
Glu His Gln Thr Tyr Cys Gln Arg Thr Leu Arg Glu Ile Lys Ile Leu
305             310             315             320
Leu Arg Phe Arg His Glu Asn Ile Ile Gly Ile Asn Asp Ile Ile Arg
            325             330             335
Ala Pro Thr Ile Glu Gln Met Lys Asp Val Tyr Ile Val Gln Asp Leu
            340             345             350
Met Glu Thr Asp Leu Tyr Lys Leu Leu Lys Thr Gln His Leu Ser Asn
            355             360             365
Asp His Ile Cys Tyr Phe Leu Tyr Gln Ile Leu Arg Gly Leu Lys Tyr
            370             375             380
Ile His Ser Ala Asn Val Leu His Arg Asp Leu Lys Pro Ser Asn Leu
385             390             395             400
Leu Leu Asn Thr Thr Cys Asp Leu Lys Ile Cys Asp Phe Gly Leu Ala
            405             410             415
Arg Val Ala Asp Pro Asp His Asp His Thr Gly Phe Leu Thr Glu Tyr
            420             425             430
Val Ala Thr Arg Trp Tyr Arg Ala Pro Glu Ile Met Leu Asn Ser Lys
            435             440             445
Gly Tyr Thr Lys Ser Ile Asp Ile Trp Ser Val Gly Cys Ile Leu Ala
            450             455             460
Glu Met Leu Ser Asn Arg Pro Ile Phe Pro Gly Lys His Tyr Leu Asp
465             470             475             480
Gln Leu Asn His Ile Leu Gly Ile Leu Gly Ser Pro Ser Gln Glu Asp
            485             490             495
Leu Asn Cys Ile Ile Asn Leu Lys Ala Arg Asn Tyr Leu Leu Ser Leu
            500             505             510
Pro His Lys Asn Lys Val Pro Trp Asn Arg Leu Phe Pro Asn Ala Asp
            515             520             525
Ser Lys Ala Leu Asp Leu Leu Asp Lys Met Leu Thr Phe Asn Pro His
            530             535             540
Lys Arg Ile Glu Val Glu Gln Ala Leu Ala His Pro Tyr Leu Glu Gln
545             550             555             560
Tyr Tyr Asp Pro Ser Asp Glu Pro Ile Ala Glu Ala Pro Phe Lys Phe
            565             570             575
Asp Met Glu Leu Asp Asp Leu Pro Lys Glu Lys Leu Lys Glu Leu Ile
            580             585             590
Phe Glu Glu Thr Ala Arg Phe Gln Pro Gly Tyr Arg Ser
            595             600             605
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<210> 42

<211> 2529

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-Grk5 fusion

<220>

<221>   CDS

<222>   (1)..(2526)

<400>   42
atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg   48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1   5   10   15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc   96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20   25   30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc   144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35   40   45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc   192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50   55   60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag   240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65   70   75   80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag   288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85   90   95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag   336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100   105   110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc   384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
            115   120   125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac   432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130   135   140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac   480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145   150   155   160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc   528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165   170   175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc   576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180   185   190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg   624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
            195   200   205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc   672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
        210   215   220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc   720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225   230   235   240
gga ctc aga tct cga gct caa gct tcg aat tcg tca atg gag ctg gaa   768
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Ser Met Glu Leu Glu
                245   250   255
aac atc gtg gcc aac acg gtc ttg ctg aaa gcc agg gaa ggg ggc gga   816
Asn Ile Val Ala Asn Thr Val Leu Leu Lys Ala Arg Glu Gly Gly Gly
                260   265   270
gga aag cgc aaa ggg aaa agc aag aag tgg aaa gaa atc ctg aag ttc   864
Gly Lys Arg Lys Gly Lys Ser Lys Lys Trp Lys Glu Ile Leu Lys Phe

20

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          275                    280                    285
cct cac att agc cag tgt gaa gac ctc cga agg acc ata gac aga gat    912
Pro His Ile Ser Gln Cys Glu Asp Leu Arg Arg Thr Ile Asp Arg Asp
     290                    295                    300
tac tgc agt tta tgt gac aag cag cca atc ggg agg ctg ctt ttc cgg    960
Tyr Cys Ser Leu Cys Asp Lys Gln Pro Ile Gly Arg Leu Leu Phe Arg
305                    310                    315                    320
cag ttt tgt gaa acc agg cct ggg ctg gag tgt tac att cag ttc ctg   1008
Gln Phe Cys Glu Thr Arg Pro Gly Leu Glu Cys Tyr Ile Gln Phe Leu
                    325                    330                    335
gac tcc gtg gca gaa tat gaa gtt act cca gat gaa aaa ctg gga gag   1056
Asp Ser Val Ala Glu Tyr Glu Val Thr Pro Asp Glu Lys Leu Gly Glu
          340                    345                    350
aaa ggg aag gaa att atg acc aag tac ctc acc cca aag tcc cct gtt   1104
Lys Gly Lys Glu Ile Met Thr Lys Tyr Leu Thr Pro Lys Ser Pro Val
          355                    360                    365
ttc ata gcc caa gtt ggc caa gac ctg gtc tcc cag acg gag gag aag   1152
Phe Ile Ala Gln Val Gly Gln Asp Leu Val Ser Gln Thr Glu Glu Lys
370                    375                    380
ctc cta cag aag ccg tgc aaa gaa ctc ttt tct gcc tgt gca cag tct   1200
Leu Leu Gln Lys Pro Cys Lys Glu Leu Phe Ser Ala Cys Ala Gln Ser
385                    390                    395                    400
gtc cac gag tac ctg agg gga gaa cca ttc cac gaa tat ctg gac agc   1248
Val His Glu Tyr Leu Arg Gly Glu Pro Phe His Glu Tyr Leu Asp Ser
                    405                    410                    415
atg ttt ttt gac cgc ttt ctc cag tgg aag tgg ttg gaa agg caa ccg   1296
Met Phe Phe Asp Arg Phe Leu Gln Trp Lys Trp Leu Glu Arg Gln Pro
          420                    425                    430
gtg acc aaa aac act ttc agg cag tat cga gtg cta gga aaa ggg ggc   1344
Val Thr Lys Asn Thr Phe Arg Gln Tyr Arg Val Leu Gly Lys Gly Gly
          435                    440                    445
ttc ggg gag gtc tgt gcc tgc cag gtt cgg gcc acg ggt aaa atg tat   1392
Phe Gly Glu Val Cys Ala Cys Gln Val Arg Ala Thr Gly Lys Met Tyr
          450                    455                    460
gcc tgc aag cgc ttg gag aag aag agg atc aaa aag agg aaa ggg gag   1440
Ala Cys Lys Arg Leu Glu Lys Lys Arg Ile Lys Lys Arg Lys Gly Glu
465                    470                    475                    480
tcc atg gcc ctc aat gag aag cag atc ctc gag aag gtc aac agt cag   1488
Ser Met Ala Leu Asn Glu Lys Gln Ile Leu Glu Lys Val Asn Ser Gln
                    485                    490                    495
ttt gtg gtc aac ctg gcc tat gcc tac gag acc aag gat gca ctg tgc   1536
Phe Val Val Asn Leu Ala Tyr Ala Tyr Glu Thr Lys Asp Ala Leu Cys
          500                    505                    510
ttg gtc ctg acc atc atg aat ggg ggt gac ctg aag ttc cac atc tac   1584
Leu Val Leu Thr Ile Met Asn Gly Gly Asp Leu Lys Phe His Ile Tyr
          515                    520                    525
aac atg ggc aac cct ggc ttc gag gag gag cgg gcc ttg ttt tat gcg   1632
Asn Met Gly Asn Pro Gly Phe Glu Glu Glu Arg Ala Leu Phe Tyr Ala
          530                    535                    540
gca gag atc ctc tgc ggc tta gaa gac ctc cac cgt gag aac acc gtc   1680
Ala Glu Ile Leu Cys Gly Leu Glu Asp Leu His Arg Glu Asn Thr Val
545                    550                    555                    560
tac cga gat ctg aaa cct gaa aac atc ctg tta gat gat tat ggc cac   1728
Tyr Arg Asp Leu Lys Pro Glu Asn Ile Leu Leu Asp Asp Tyr Gly His
                    565                    570                    575
att agg atc tca gac ctg ggc ttg gct gtg aag atc ccc gag gga gac   1776
Ile Arg Ile Ser Asp Leu Gly Leu Ala Val Lys Ile Pro Glu Gly Asp
          580                    585                    590
ctg atc cgc ggc cgg gtg ggc act gtt ggc tac atg gcc ccc gaa gtc   1824
Leu Ile Arg Gly Arg Val Gly Thr Val Gly Tyr Met Ala Pro Glu Val
          595                    600                    605
ctg aac aac cag agg tac ggc ctg agc ccc gac tac tgg ggc ctt ggc   1872
Leu Asn Asn Gln Arg Tyr Gly Leu Ser Pro Asp Tyr Trp Gly Leu Gly
```

21

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          610                      615                       620
tgc ctc atc tat gag atg atc gag ggc cag tcg ccg ttc cgc ggc cgt          1920
Cys Leu Ile Tyr Glu Met Ile Glu Gly Gln Ser Pro Phe Arg Gly Arg
625                      630                       635                    640
aag gag aag gtg aag cgg gag gag gtg gac cgc cgg gtc ctg gag acg          1968
Lys Glu Lys Val Lys Arg Glu Glu Val Asp Arg Arg Val Leu Glu Thr
                    645                       650                       655
gag gag gtg tac tcc cac aag ttc tcc gag gag gcc aag tcc atc tgc          2016
Glu Glu Val Tyr Ser His Lys Phe Ser Glu Glu Ala Lys Ser Ile Cys
                660                       665                       670
aag atg ctg ctc acg aaa gat gcg aag cag agg ctg ggc tgc cag gag          2064
Lys Met Leu Leu Thr Lys Asp Ala Lys Gln Arg Leu Gly Cys Gln Glu
            675                       680                       685
gag ggg gct gca gag gtc aag aga cac ccc ttc ttc agg aac atg aac          2112
Glu Gly Ala Ala Glu Val Lys Arg His Pro Phe Phe Arg Asn Met Asn
        690                       695                       700
ttc aag cgc tta gaa gcc ggg atg ttg gac cct ccc ttc gtt cca gac          2160
Phe Lys Arg Leu Glu Ala Gly Met Leu Asp Pro Pro Phe Val Pro Asp
705                       710                       715                   720
ccc cgc gct gtg tac tgt aag gac gtg ctg gac atc gag cag ttc tcc          2208
Pro Arg Ala Val Tyr Cys Lys Asp Val Leu Asp Ile Glu Gln Phe Ser
                    725                       730                       735
act gtg aag ggc gtc aat ctg gac cac aca gac gac gac ttc tac tcc          2256
Thr Val Lys Gly Val Asn Leu Asp His Thr Asp Asp Asp Phe Tyr Ser
                740                       745                       750
aag ttc tcc acg ggc tct gtg tcc atc cca tgg caa aac gag atg ata          2304
Lys Phe Ser Thr Gly Ser Val Ser Ile Pro Trp Gln Asn Glu Met Ile
            755                       760                       765
gaa aca gaa tgc ttt aag gag ctg aac gtg ttt gga cct aat ggt acc          2352
Glu Thr Glu Cys Phe Lys Glu Leu Asn Val Phe Gly Pro Asn Gly Thr
        770                       775                       780
ctc ccg cca gat ctg aac aga aac cac cct ccg gaa ccg ccc aag aaa          2400
Leu Pro Pro Asp Leu Asn Arg Asn His Pro Pro Glu Pro Pro Lys Lys
785                       790                       795                   800
ggg ctg ctc cag aga ctc ttc aag cgg cag cat cag aac aat tcc aag          2448
Gly Leu Leu Gln Arg Leu Phe Lys Arg Gln His Gln Asn Asn Ser Lys
                    805                       810                       815
agt tcg ccc agc tcc aag acc agt ttt aac cac cac ata aac tca aac          2496
Ser Ser Pro Ser Ser Lys Thr Ser Phe Asn His His Ile Asn Ser Asn
                820                       825                       830
cat gtc agc tcg aac tcc acc gga agc agc tag                             2529
His Val Ser Ser Asn Ser Thr Gly Ser Ser
            835                       840
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<210> 43

<211> 842

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-Grk5 fusion

<400> 43

Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu

22

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1              5                        10                    15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20                    25                    30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                    40                    45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50                    55                    60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                    70                    75                    80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                    90                    95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100                   105                   110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
    115                   120                   125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130                   135                   140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                   150                   155                   160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                   170                   175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                   185                   190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
            195                   200                   205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                   215                   220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                   230                   235                   240
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Ser Met Glu Leu Glu
            245                   250                   255
Asn Ile Val Ala Asn Thr Val Leu Leu Lys Ala Arg Glu Gly Gly Gly
            260                   265                   270
Gly Lys Arg Lys Gly Lys Ser Lys Lys Trp Lys Glu Ile Leu Lys Phe
            275                   280                   285
Pro His Ile Ser Gln Cys Glu Asp Leu Arg Arg Thr Ile Asp Arg Asp
    290                   295                   300
Tyr Cys Ser Leu Cys Asp Lys Gln Pro Ile Gly Arg Leu Leu Phe Arg
305                   310                   315                   320
Gln Phe Cys Glu Thr Arg Pro Gly Leu Glu Cys Tyr Ile Gln Phe Leu
            325                   330                   335
Asp Ser Val Ala Glu Tyr Glu Val Thr Pro Asp Glu Lys Leu Gly Glu
            340                   345                   350
Lys Gly Lys Glu Ile Met Thr Lys Tyr Leu Thr Pro Lys Ser Pro Val
            355                   360                   365
Phe Ile Ala Gln Val Gly Gln Asp Leu Val Ser Gln Thr Glu Glu Lys
    370                   375                   380
Leu Leu Gln Lys Pro Cys Lys Glu Leu Phe Ser Ala Cys Ala Gln Ser
385                   390                   395                   400
Val His Glu Tyr Leu Arg Gly Glu Pro Phe His Glu Tyr Leu Asp Ser
            405                   410                   415
Met Phe Phe Asp Arg Phe Leu Gln Trp Lys Trp Leu Glu Arg Gln Pro
            420                   425                   430
Val Thr Lys Asn Thr Phe Arg Gln Tyr Arg Val Leu Gly Lys Gly Gly
            435                   440                   445
Phe Gly Glu Val Cys Ala Cys Gln Val Arg Ala Thr Gly Lys Met Tyr
    450                   455                   460
Ala Cys Lys Arg Leu Glu Lys Lys Arg Ile Lys Lys Arg Lys Gly Glu
465                   470                   475                   480
Ser Met Ala Leu Asn Glu Lys Gln Ile Leu Glu Lys Val Asn Ser Gln
                485                   490                   495
Phe Val Val Asn Leu Ala Tyr Ala Tyr Glu Thr Lys Asp Ala Leu Cys
            500                   505                   510
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23

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Leu Val Leu Thr Ile Met Asn Gly Gly Asp Leu Lys Phe His Ile Tyr
    515                 520                 525
Asn Met Gly Asn Pro Gly Phe Glu Glu Glu Arg Ala Leu Phe Tyr Ala
    530                 535                 540
Ala Glu Ile Leu Cys Gly Leu Glu Asp Leu His Arg Glu Asn Thr Val
545                 550                 555                 560
Tyr Arg Asp Leu Lys Pro Glu Asn Ile Leu Leu Asp Asp Tyr Gly His
                565                 570                 575
Ile Arg Ile Ser Asp Leu Gly Leu Ala Val Lys Ile Pro Glu Gly Asp
                580                 585                 590
Leu Ile Arg Gly Arg Val Gly Thr Val Gly Tyr Met Ala Pro Glu Val
    595                 600                 605
Leu Asn Asn Gln Arg Tyr Gly Leu Ser Pro Asp Tyr Trp Gly Leu Gly
    610                 615                 620
Cys Leu Ile Tyr Glu Met Ile Glu Gly Gln Ser Pro Phe Arg Gly Arg
625                 630                 635                 640
Lys Glu Lys Val Lys Arg Glu Glu Val Asp Arg Arg Val Leu Glu Thr
                645                 650                 655
Glu Glu Val Tyr Ser His Lys Phe Ser Glu Glu Ala Lys Ser Ile Cys
                660                 665                 670
Lys Met Leu Leu Thr Lys Asp Ala Lys Gln Arg Leu Gly Cys Gln Glu
    675                 680     ·           685
Glu Gly Ala Ala Glu Val Lys Arg His Pro Phe Phe Arg Asn Met Asn
    690                 695                 700
Phe Lys Arg Leu Glu Ala Gly Met Leu Asp Pro Pro Phe Val Pro Asp
705                 710                 715                 720
Pro Arg Ala Val Tyr Cys Lys Asp Val Leu Asp Ile Glu Gln Phe Ser
                725                 730                 735
Thr Val Lys Gly Val Asn Leu Asp His Thr Asp Asp Asp Phe Tyr Ser
                740                 745                 750
Lys Phe Ser Thr Gly Ser Val Ser Ile Pro Trp Gln Asn Glu Met Ile
    755                 760                 765
Glu Thr Glu Cys Phe Lys Glu Leu Asn Val Phe Gly Pro Asn Gly Thr
    770                 775                 780
Leu Pro Pro Asp Leu Asn Arg Asn His Pro Pro Glu Pro Pro Lys Lys
785                 790                 795                 800
Gly Leu Leu Gln Arg Leu Phe Lys Arg Gln His Gln Asn Asn Ser Lys
                805                 810                 815
Ser Ser Pro Ser Ser Lys Thr Ser Phe Asn His His Ile Asn Ser Asn
                820                 825                 830
His Val Ser Ser Asn Ser Thr Gly Ser Ser
    835                 840
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<210> 44

<211> 1902

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-Jnkl fusion

<220>

<221> CDS

<222> (1)..(1899)

<400> 44
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atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg      48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc      96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc     144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc     192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag     240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag     288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag     336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100                 105                 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc     384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
            115                 120                 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac     432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                 135                 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac     480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc     528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc     576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg     624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
            195                 200                 205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc     672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
        210                 215                 220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc     720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
gga ctc aga tct cga gct cga gcc atc atg agc aga agc aag cgt gac     768
Gly Leu Arg Ser Arg Ala Arg Ala Ile Met Ser Arg Ser Lys Arg Asp
                245                 250                 255
aac aat ttt tat agt gta gag att gga gat tct aca ttc aca gtc ctg     816
Asn Asn Phe Tyr Ser Val Glu Ile Gly Asp Ser Thr Phe Thr Val Leu
                260                 265                 270
aaa cga tat cag aat tta aaa cct ata ggc tca gga gct caa gga ata     864
Lys Arg Tyr Gln Asn Leu Lys Pro Ile Gly Ser Gly Ala Gln Gly Ile
            275                 280                 285
gta tgc gca gct tat gat gcc att ctt gaa aga aat gtt gca atc aag     912
Val Cys Ala Ala Tyr Asp Ala Ile Leu Glu Arg Asn Val Ala Ile Lys
        290                 295                 300
aag cta agc cga cca ttt cag aat cag act cat gcc aag cgg gcc tac     960
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25

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Lys Leu Ser Arg Pro Phe Gln Asn Gln Thr His Ala Lys Arg Ala Tyr
305                 310                 315                     320
aga gag cta gtt ctt atg aaa tgt gtt aat cac aaa aat ata att ggc      1008
Arg Glu Leu Val Leu Met Lys Cys Val Asn His Lys Asn Ile Ile Gly
                    325                 330                 335
ctt ttg aat gtt ttc aca cca cag aaa tcc cta gaa gaa ttt caa gat      1056
Leu Leu Asn Val Phe Thr Pro Gln Lys Ser Leu Glu Glu Phe Gln Asp
                340                 345                 350
gtt tac ata gtc atg gag ctc atg gat gca aat ctt tgc caa gtg att      1104
Val Tyr Ile Val Met Glu Leu Met Asp Ala Asn Leu Cys Gln Val Ile
            355                 360                 365
cag atg gag cta gat cat gaa aga atg tcc tac ctt ctc tat cag atg      1152
Gln Met Glu Leu Asp His Glu Arg Met Ser Tyr Leu Leu Tyr Gln Met
        370                 375                 380
ctg tgt gga atc aag cac ctt cat tct gct gga att att cat cgg gac      1200
Leu Cys Gly Ile Lys His Leu His Ser Ala Gly Ile Ile His Arg Asp
385                 390                 395                     400
tta aag ccc agt aat ata gta gta aaa tct gat tgc act ttg aag att      1248
Leu Lys Pro Ser Asn Ile Val Val Lys Ser Asp Cys Thr Leu Lys Ile
                405                 410                 415
ctt gac ttc ggt ctg gcc agg act gca gga acg agt ttt atg atg acg      1296
Leu Asp Phe Gly Leu Ala Arg Thr Ala Gly Thr Ser Phe Met Met Thr
                420                 425                 430
cct tat gta gtg act cgc tac tac aga gca ccc gag gtc atc ctt ggc      1344
Pro Tyr Val Val Thr Arg Tyr Tyr Arg Ala Pro Glu Val Ile Leu Gly
            435                 440                 445
atg ggc tac aag gaa aac gtg gat tta tgg tct gtg ggg tgc att atg      1392
Met Gly Tyr Lys Glu Asn Val Asp Leu Trp Ser Val Gly Cys Ile Met
    450                 455                 460
gga gaa atg gtt tgc cac aaa atc ctc ttt cca gga agg gac tat att      1440
Gly Glu Met Val Cys His Lys Ile Leu Phe Pro Gly Arg Asp Tyr Ile
465                 470                 475                     480
gat cag tgg aat aaa gtt att gaa cag ctt gga aca cca tgt cct gaa      1488
Asp Gln Trp Asn Lys Val Ile Glu Gln Leu Gly Thr Pro Cys Pro Glu
                485                 490                 495
ttc atg aag aaa ctg caa cca aca gta agg act tac gtt gaa aac aga      1536
Phe Met Lys Lys Leu Gln Pro Thr Val Arg Thr Tyr Val Glu Asn Arg
                500                 505                 510
cct aaa tat gct gga tat agc ttt gag aaa ctc ttc cct gat gtc ctt      1584
Pro Lys Tyr Ala Gly Tyr Ser Phe Glu Lys Leu Phe Pro Asp Val Leu
            515                 520                 525
ttc cca gct gac tca gaa cac aac aaa ctt aaa gcc agt cag gca agg      1632
Phe Pro Ala Asp Ser Glu His Asn Lys Leu Lys Ala Ser Gln Ala Arg
        530                 535                 540
gat ttg tta tcc aaa atg ctg gta ata gat gca tct aaa agg atc tct      1680
Asp Leu Leu Ser Lys Met Leu Val Ile Asp Ala Ser Lys Arg Ile Ser
545                 550                 555                     560
gta gat gaa gct ctc caa cac ccg tac atc aat gtc tgg tat gat cct      1728
Val Asp Glu Ala Leu Gln His Pro Tyr Ile Asn Val Trp Tyr Asp Pro
                565                 570                 575
tct gaa gca gaa gct cca cca cca aag atc cct gac aag cag tta gat      1776
Ser Glu Ala Glu Ala Pro Pro Pro Lys Ile Pro Asp Lys Gln Leu Asp
                580                 585                 590
gaa agg gaa cac aca ata gaa gag tgg aaa gaa ttg ata tat aag gaa      1824
Glu Arg Glu His Thr Ile Glu Glu Trp Lys Glu Leu Ile Tyr Lys Glu
                595                 600                 605
gtt atg gac ttg gag gag aga acc aag aat gga gtt ata cgg ggg cag      1872
Val Met Asp Leu Glu Glu Arg Thr Lys Asn Gly Val Ile Arg Gly Gln
    610                 615                 620
ccc tct cct tta gca cag gtg cag cag tga                              1902
Pro Ser Pro Leu Ala Gln Val Gln Gln
625                 630
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26

<210> 45

<211> 633

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-Jnk1 fusion

<400> 45

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Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20                  25                  30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                  40                  45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50                  55                  60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100                 105                 110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
            115                 120                 125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130                 135                 140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
    195                 200                 205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                 215                 220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
Gly Leu Arg Ser Arg Ala Arg Ala Ile Met Ser Arg Ser Lys Arg Asp
                245                 250                 255
Asn Asn Phe Tyr Ser Val Glu Ile Gly Asp Ser Thr Phe Thr Val Leu
                260                 265                 270
Lys Arg Tyr Gln Asn Leu Lys Pro Ile Gly Ser Gly Ala Gln Gly Ile
            275                 280                 285
Val Cys Ala Ala Tyr Asp Ala Ile Leu Glu Arg Asn Val Ala Ile Lys
    290                 295                 300
Lys Leu Ser Arg Pro Phe Gln Asn Gln Thr His Ala Lys Arg Ala Tyr
305                 310                 315                 320
Arg Glu Leu Val Leu Met Lys Cys Val Asn His Lys Asn Ile Ile Gly
                325                 330                 335
Leu Leu Asn Val Phe Thr Pro Gln Lys Ser Leu Glu Glu Phe Gln Asp
            340                 345                 350
Val Tyr Ile Val Met Glu Leu Met Asp Ala Asn Leu Cys Gln Val Ile
    355                 360                 365
```

27

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Gln Met Glu Leu Asp His Glu Arg Met Ser Tyr Leu Leu Tyr Gln Met
    370                 375             380
Leu Cys Gly Ile Lys His Leu His Ser Ala Gly Ile Ile His Arg Asp
385             390             395                 400
Leu Lys Pro Ser Asn Ile Val Val Lys Ser Asp Cys Thr Leu Lys Ile
                405             410                 415
Leu Asp Phe Gly Leu Ala Arg Thr Ala Gly Thr Ser Phe Met Met Thr
        420             425                 430
Pro Tyr Val Val Thr Arg Tyr Tyr Arg Ala Pro Glu Val Ile Leu Gly
        435             440                 445
Met Gly Tyr Lys Glu Asn Val Asp Leu Trp Ser Val Gly Cys Ile Met
    450             455             460
Gly Glu Met Val Cys His Lys Ile Leu Phe Pro Gly Arg Asp Tyr Ile
465             470             475                 480
Asp Gln Trp Asn Lys Val Ile Glu Gln Leu Gly Thr Pro Cys Pro Glu
            485             490                 495
Phe Met Lys Lys Leu Gln Pro Thr Val Arg Thr Tyr Val Glu Asn Arg
        500             505             510
Pro Lys Tyr Ala Gly Tyr Ser Phe Glu Lys Leu Phe Pro Asp Val Leu
    515             520             525
Phe Pro Ala Asp Ser Glu His Asn Lys Leu Lys Ala Ser Gln Ala Arg
    530             535             540
Asp Leu Leu Ser Lys Met Leu Val Ile Asp Ala Ser Lys Arg Ile Ser
545             550             555                 560
Val Asp Glu Ala Leu Gln His Pro Tyr Ile Asn Val Trp Tyr Asp Pro
            565             570             575
Ser Glu Ala Glu Ala Pro Pro Pro Lys Ile Pro Asp Lys Gln Leu Asp
            580             585             590
Glu Arg Glu His Thr Ile Glu Glu Trp Lys Glu Leu Ile Tyr Lys Glu
    595             600             605
Val Met Asp Leu Glu Glu Arg Thr Lys Asn Gly Val Ile Arg Gly Gln
    610             615             620
Pro Ser Pro Leu Ala Gln Val Gln Gln
625             630


<210>   46

<211>   1824

<212>   DNA

<213>   Artificial Sequence


<220>

<223>   EGFP-p38 fusion

<220>

<221>   CDS

<222>   (1)..(1821)


<400>   46
atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg       48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc       96
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28

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Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
          20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc    144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
          35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc    192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
          50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag    240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag    288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                  85                  90                  95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag    336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
              100                 105                 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc    384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
              115                 120                 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac    432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
          130                 135                 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac    480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc    528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                  165                 170                 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc    576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
              180                 185                 190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg    624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
              195                 200                 205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc    672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
          210                 215                 220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc    720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
gga ctc aga tct cga ggg aaa atg tct cag gag agg ccc acg ttc tac    768
Gly Leu Arg Ser Arg Gly Lys Met Ser Gln Glu Arg Pro Thr Phe Tyr
                  245                 250                 255
cgg cag gag ctg aac aag aca atc tgg gag gtg ccc gag cgt tac cag    816
Arg Gln Glu Leu Asn Lys Thr Ile Trp Glu Val Pro Glu Arg Tyr Gln
              260                 265                 270
aac ctg tct cca gtg ggc tct ggc gcc tat ggc tct gtg tgt gct gct    864
Asn Leu Ser Pro Val Gly Ser Gly Ala Tyr Gly Ser Val Cys Ala Ala
          275                 280                 285
ttt gac aca aaa acg ggg tta cgt gtg gca gtg aag aag ctc tcc aga    912
Phe Asp Thr Lys Thr Gly Leu Arg Val Ala Val Lys Lys Leu Ser Arg
          290                 295                 300
cca ttt cag tcc atc att cat gcg aaa aga acc tac aga gaa ctg cgg    960
Pro Phe Gln Ser Ile Ile His Ala Lys Arg Thr Tyr Arg Glu Leu Arg
305                 310                 315                 320
tta ctt aaa cat atg aaa cat gaa aat gtg att ggt ctg ttg gac gtt   1008
Leu Leu Lys His Met Lys His Glu Asn Val Ile Gly Leu Leu Asp Val
              325                 330                 335
ttt aca cct gca agg tct ctg gag gaa ttc aat gat gtg tat ctg gtg   1056
Phe Thr Pro Ala Arg Ser Leu Glu Glu Phe Asn Asp Val Tyr Leu Val
          340                 345                 350
acc cat ctc atg ggg gca gat ctg aac aac att gtg aaa tgt cag aag   1104
```

29

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Thr His Leu Met Gly Ala Asp Leu Asn Asn Ile Val Lys Cys Gln Lys
    355               360               365
ctt aca gat gac cat gtt cag ttc ctt atc tac caa att ctc cga ggt        1152
Leu Thr Asp Asp His Val Gln Phe Leu Ile Tyr Gln Ile Leu Arg Gly
    370               375               380
cta aag tat ata cat tca gct gac ata att cac agg gac cta aaa cct        1200
Leu Lys Tyr Ile His Ser Ala Asp Ile Ile His Arg Asp Leu Lys Pro
385               390               395               400
agt aat cta gct gtg aat gaa gac tgt gag ctg aag att ctg gat ttt        1248
Ser Asn Leu Ala Val Asn Glu Asp Cys Glu Leu Lys Ile Leu Asp Phe
                405               410               415
gga ctg gct cgg cac aca gat gat gaa atg aca ggc tac gtg gcc act        1296
Gly Leu Ala Arg His Thr Asp Asp Glu Met Thr Gly Tyr Val Ala Thr
            420               425               430
agg tgg tac agg gct cct gag atc atg ctg aac tgg atg cat tac aac        1344
Arg Trp Tyr Arg Ala Pro Glu Ile Met Leu Asn Trp Met His Tyr Asn
        435               440               445
cag aca gtt gat att tgg tca gtg gga tgc ata atg gcc gag ctg ttg        1392
Gln Thr Val Asp Ile Trp Ser Val Gly Cys Ile Met Ala Glu Leu Leu
    450               455               460
act gga aga aca ttg ttt cct ggt aca gac cat att gat cag ttg aag        1440
Thr Gly Arg Thr Leu Phe Pro Gly Thr Asp His Ile Asp Gln Leu Lys
465               470               475               480
ctc att tta aga ctc gtt gga acc cca ggg gct gag ctt ttg aag aaa        1488
Leu Ile Leu Arg Leu Val Gly Thr Pro Gly Ala Glu Leu Leu Lys Lys
                485               490               495
atc tcc tca gag tct gca aga aac tat att cag tct ttg act cag atg        1536
Ile Ser Ser Glu Ser Ala Arg Asn Tyr Ile Gln Ser Leu Thr Gln Met
                500               505               510
ccg aag atg aac ttt gcg aat gta ttt att ggt gcc aat ccc ctg gct        1584
Pro Lys Met Asn Phe Ala Asn Val Phe Ile Gly Ala Asn Pro Leu Ala
        515               520               525
gtc gac ttg ctg gag aag atg ctt gta ttg gac tca gat aag aga att        1632
Val Asp Leu Leu Glu Lys Met Leu Val Leu Asp Ser Asp Lys Arg Ile
    530               535               540
aca gcg gcc caa gcc ctt gca cat gcc tac ttt gct cag tac cac gat        1680
Thr Ala Ala Gln Ala Leu Ala His Ala Tyr Phe Ala Gln Tyr His Asp
545               550               555               560
cct gat gat gaa cca gtg gcc gat cct tat gat cag tcc ttt gaa agc        1728
Pro Asp Asp Glu Pro Val Ala Asp Pro Tyr Asp Gln Ser Phe Glu Ser
                565               570               575
agg gac ctc ctt ata gat gag tgg aaa agc ctg acc tat gat gaa gtc        1776
Arg Asp Leu Leu Ile Asp Glu Trp Lys Ser Leu Thr Tyr Asp Glu Val
            580               585               590
atc agc ttt gtg cca cca ccc ctt gac caa gaa gag atg gag tcc tga        1824
Ile Ser Phe Val Pro Pro Pro Leu Asp Gln Glu Glu Met Glu Ser
        595               600               605
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<210> 47

<211> 607

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-p38 fusion

30

<400> 47

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Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20                  25                  30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                  40                  45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50                  55                  60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100                 105                 110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115                 120                 125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130                 135                 140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
            195                 200                 205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                 215                 220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
Gly Leu Arg Ser Arg Gly Lys Met Ser Gln Glu Arg Pro Thr Phe Tyr
                245                 250                 255
Arg Gln Glu Leu Asn Lys Thr Ile Trp Glu Val Pro Glu Arg Tyr Gln
                260                 265                 270
Asn Leu Ser Pro Val Gly Ser Gly Ala Tyr Gly Ser Val Cys Ala Ala
            275                 280                 285
Phe Asp Thr Lys Thr Gly Leu Arg Val Ala Val Lys Lys Leu Ser Arg
    290                 295                 300
Pro Phe Gln Ser Ile Ile His Ala Lys Arg Thr Tyr Arg Glu Leu Arg
305                 310                 315                 320
Leu Leu Lys His Met Lys His Glu Asn Val Ile Gly Leu Leu Asp Val
                325                 330                 335
Phe Thr Pro Ala Arg Ser Leu Glu Glu Phe Asn Asp Val Tyr Leu Val
            340                 345                 350
Thr His Leu Met Gly Ala Asp Leu Asn Asn Ile Val Lys Cys Gln Lys
        355                 360                 365
Leu Thr Asp Asp His Val Gln Phe Leu Ile Tyr Gln Ile Leu Arg Gly
    370                 375                 380
Leu Lys Tyr Ile His Ser Ala Asp Ile Ile His Arg Asp Leu Lys Pro
385                 390                 395                 400
Ser Asn Leu Ala Val Asn Glu Asp Cys Glu Leu Lys Ile Leu Asp Phe
            405                 410                 415
Gly Leu Ala Arg His Thr Asp Asp Glu Met Thr Gly Tyr Val Ala Thr
            420                 425                 430
Arg Trp Tyr Arg Ala Pro Glu Ile Met Leu Asn Trp Met His Tyr Asn
        435                 440                 445
Gln Thr Val Asp Ile Trp Ser Val Gly Cys Ile Met Ala Glu Leu Leu
    450                 455                 460
Thr Gly Arg Thr Leu Phe Pro Gly Thr Asp His Ile Asp Gln Leu Lys
465                 470                 475                 480
```

31

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Leu Ile Leu Arg Leu Val Gly Thr Pro Gly Ala Glu Leu Leu Lys Lys
                485                 490                 495
Ile Ser Ser Glu Ser Ala Arg Asn Tyr Ile Gln Ser Leu Thr Gln Met
                500                 505                 510
Pro Lys Met Asn Phe Ala Asn Val Phe Ile Gly Ala Asn Pro Leu Ala
                515                 520                 525
Val Asp Leu Leu Glu Lys Met Leu Val Leu Asp Ser Asp Lys Arg Ile
            530                 535                 540
Thr Ala Ala Gln Ala Leu Ala His Ala Tyr Phe Ala Gln Tyr His Asp
545                 550                 555                 560
Pro Asp Asp Glu Pro Val Ala Asp Pro Tyr Asp Gln Ser Phe Glu Ser
                565                 570                 575
Arg Asp Leu Leu Ile Asp Glu Trp Lys Ser Leu Thr Tyr Asp Glu Val
            580                 585                 590
Ile Ser Phe Val Pro Pro Pro Leu Asp Gln Glu Glu Met Glu Ser
            595                 600                 605
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<210> 48

<211> 2907

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-p85alpha fusion

<220>

<221> CDS

<222> (1)..(2904)


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<400>  48
atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg      48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                  10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc      96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc     144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc     192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
            50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag     240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag     288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag     336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100                 105                 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc     384
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```
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115                 120                 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac        432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                 135                 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac        480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc        528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc        576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg        624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
            195                 200                 205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc        672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
        210                 215                 220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc        720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
gga ctc aga tct atg agt gct gag ggg tac cag tac aga gcg ctg tat        768
Gly Leu Arg Ser Met Ser Ala Glu Gly Tyr Gln Tyr Arg Ala Leu Tyr
                245                 250                 255
gat tat aaa aag gaa aga gaa gaa gat att gac ttg cac ttg ggt gac        816
Asp Tyr Lys Lys Glu Arg Glu Glu Asp Ile Asp Leu His Leu Gly Asp
                260                 265                 270
ata ttg act gtg aat aaa ggg tcc tta gta gct ctt gga ttc agt gat        864
Ile Leu Thr Val Asn Lys Gly Ser Leu Val Ala Leu Gly Phe Ser Asp
            275                 280                 285
gga cag gaa gcc agg cct gaa gaa att ggc tgg tta aat ggc tat aat        912
Gly Gln Glu Ala Arg Pro Glu Glu Ile Gly Trp Leu Asn Gly Tyr Asn
        290                 295                 300
gaa acc aca ggg gaa agg ggg gac ttt ccg gga act tac gta gaa tat        960
Glu Thr Thr Gly Glu Arg Gly Asp Phe Pro Gly Thr Tyr Val Glu Tyr
305                 310                 315                 320
att gga agg aaa aaa atc tcg cct ccc aca cca aag ccc cgg cca cct       1008
Ile Gly Arg Lys Lys Ile Ser Pro Pro Thr Pro Lys Pro Arg Pro Pro
                325                 330                 335
cgg cct ctt cct gtt gca cca ggt tct tcg aaa act gaa gca gat gtt       1056
Arg Pro Leu Pro Val Ala Pro Gly Ser Ser Lys Thr Glu Ala Asp Val
            340                 345                 350
gaa caa caa gct ttg act ctc ccg gat ctt gca gag cag ttt gcc cct       1104
Glu Gln Gln Ala Leu Thr Leu Pro Asp Leu Ala Glu Gln Phe Ala Pro
        355                 360                 365
cct gac att gcc ccg cct ctt ctt atc aag ctc gtg gaa gcc att gaa       1152
Pro Asp Ile Ala Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu
        370                 375                 380
aag aaa ggt ctg gaa tgt tca act cta tac aga aca cag agc tcc agc       1200
Lys Lys Gly Leu Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser
385                 390                 395                 400
aac ctg gca gaa tta cga cag ctt ctt gat tgt gat aca ccc tcc gtg       1248
Asn Leu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val
                405                 410                 415
gac ttg gaa atg atc gat gtg cac gtt ttg gct gac gct ttc aaa cgc       1296
Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg
            420                 425                 430
tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt       1344
Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser
        435                 440                 445
gaa atg att tct tta gct cca gaa gta caa agc tcc gaa gaa tat att       1392
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33

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Glu Met Ile Ser Leu Ala Pro Glu Val Gln Ser Ser Glu Glu Tyr Ile
    450                     455                 460
cag cta ttg aag aag ctt att agg tcg cct agc ata cct cat cag tat     1440
Gln Leu Leu Lys Lys Leu Ile Arg Ser Pro Ser Ile Pro His Gln Tyr
465                     470                 475                 480
tgg ctt acg ctt cag tat ttg tta aaa cat ttc ttc aag ctc tct caa     1488
Trp Leu Thr Leu Gln Tyr Leu Leu Lys His Phe Phe Lys Leu Ser Gln
                485                 490                 495
acc tcc agc aaa aat ctg ttg aat gca aga gta ctc tct gaa att ttc     1536
Thr Ser Ser Lys Asn Leu Leu Asn Ala Arg Val Leu Ser Glu Ile Phe
            500                 505                 510
agc cct atg ctt ttc aga ttc tca gca gcc agc tct gat aat act gaa     1584
Ser Pro Met Leu Phe Arg Phe Ser Ala Ala Ser Ser Asp Asn Thr Glu
        515                 520                 525
aac ctc ata aaa gtt ata gaa att tta atc tca act gaa tgg aat gaa     1632
Asn Leu Ile Lys Val Ile Glu Ile Leu Ile Ser Thr Glu Trp Asn Glu
    530                 535                 540
cga cag cct gca cca gca ctg cct cct aaa cca cca aaa cct act act     1680
Arg Gln Pro Ala Pro Ala Leu Pro Pro Lys Pro Pro Lys Pro Thr Thr
545                 550                 555                 560
gta gcc aac aac ggt atg aat aac aat atg tcc tta caa aat gct gaa     1728
Val Ala Asn Asn Gly Met Asn Asn Asn Met Ser Leu Gln Asn Ala Glu
                565                 570                 575
tgg tac tgg gga gat atc tcg agg gaa gaa gtg aat gaa aaa ctt cga     1776
Trp Tyr Trp Gly Asp Ile Ser Arg Glu Glu Val Asn Glu Lys Leu Arg
            580                 585                 590
gat aca gca gac ggg acc ttt ttg gta cga gat gcg tct act aaa atg     1824
Asp Thr Ala Asp Gly Thr Phe Leu Val Arg Asp Ala Ser Thr Lys Met
            595                 600                 605
cat ggt gat tat act ctt aca cta agg aaa ggg gga aat aac aaa tta     1872
His Gly Asp Tyr Thr Leu Thr Leu Arg Lys Gly Gly Asn Asn Lys Leu
    610                 615                 620
atc aaa ata ttt cat cga gat ggg aaa tat ggc ttc tct gac cca tta     1920
Ile Lys Ile Phe His Arg Asp Gly Lys Tyr Gly Phe Ser Asp Pro Leu
625                 630                 635                 640
acc ttc agt tct gtg gtt gaa tta ata aac cac tac cgg aat gaa tct     1968
Thr Phe Ser Ser Val Val Glu Leu Ile Asn His Tyr Arg Asn Glu Ser
                645                 650                 655
cta gct cag tat aat ccc aaa ttg gat gtg aaa tta ctt tat cca gta     2016
Leu Ala Gln Tyr Asn Pro Lys Leu Asp Val Lys Leu Leu Tyr Pro Val
            660                 665                 670
tcc aaa tac caa cag gat caa gtt gtc aaa gaa gat aat att gaa gct     2064
Ser Lys Tyr Gln Gln Asp Gln Val Val Lys Glu Asp Asn Ile Glu Ala
            675                 680                 685
gta ggg aaa aaa tta cat gaa tat aac act cag ttt caa gaa aaa agt     2112
Val Gly Lys Lys Leu His Glu Tyr Asn Thr Gln Phe Gln Glu Lys Ser
    690                 695                 700
cga gaa tat gat aga tta tat gaa gaa tat acc cgc aca tcc cag gaa     2160
Arg Glu Tyr Asp Arg Leu Tyr Glu Glu Tyr Thr Arg Thr Ser Gln Glu
705                 710                 715                 720
atc caa atg aaa agg aca gct att gaa gca ttt aat gaa acc ata aaa     2208
Ile Gln Met Lys Arg Thr Ala Ile Glu Ala Phe Asn Glu Thr Ile Lys
                725                 730                 735
ata ttt gaa gaa cag tgc cag acc caa gag cgg tac agc aaa gaa tac     2256
Ile Phe Glu Glu Gln Cys Gln Thr Gln Glu Arg Tyr Ser Lys Glu Tyr
                740                 745                 750
ata gaa aag ttt aaa cgt gaa ggc aat gag aaa gaa ata caa agg att     2304
Ile Glu Lys Phe Lys Arg Glu Gly Asn Glu Lys Glu Ile Gln Arg Ile
            755                 760                 765
atg cat aat tat gat aag ttg aag tct cga atc agt gaa att att gac     2352
Met His Asn Tyr Asp Lys Leu Lys Ser Arg Ile Ser Glu Ile Ile Asp
    770                 775                 780
agt aga aga aga ttg gaa gaa gac ttg aag aag cag gca gct gag tat     2400
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34

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Ser Arg Arg Arg Leu Glu Glu Asp Leu Lys Lys Gln Ala Ala Glu Tyr
785             790             795                 800
cga gaa att gac aaa cgt atg aac agc att aaa cca gac ctt atc cag        2448
Arg Glu Ile Asp Lys Arg Met Asn Ser Ile Lys Pro Asp Leu Ile Gln
            805             810             815
ctg aga aag acg aga gac caa tac ttg atg tgg ttg act caa aaa ggt        2496
Leu Arg Lys Thr Arg Asp Gln Tyr Leu Met Trp Leu Thr Gln Lys Gly
            820             825             830
gtt cgg caa aag aag ttg aac gag tgg ttg ggc aat gaa aac act gaa        2544
Val Arg Gln Lys Lys Leu Asn Glu Trp Leu Gly Asn Glu Asn Thr Glu
            835             840             845
gac caa tat tca ctg gtg gaa gat gat gaa gat ttg ccc cat cat gat        2592
Asp Gln Tyr Ser Leu Val Glu Asp Asp Glu Asp Leu Pro His His Asp
            850             855             860
gag aag aca tgg aat gtt gga agc agc aac cga aac aaa gct gaa aac        2640
Glu Lys Thr Trp Asn Val Gly Ser Ser Asn Arg Asn Lys Ala Glu Asn
865             870             875                 880
ctg ttg cga ggg aag cga gat ggc act ttt ctt gtc cgg gag agc agt        2688
Leu Leu Arg Gly Lys Arg Asp Gly Thr Phe Leu Val Arg Glu Ser Ser
            885             890             895
aaa cag ggc tgc tat gcc tgc tct gta gtg gtg gac ggc gaa gta aag        2736
Lys Gln Gly Cys Tyr Ala Cys Ser Val Val Val Asp Gly Glu Val Lys
            900             905             910
cat tgt gtc ata aac aaa aca gca act ggc tat ggc ttt gcc gag ccc        2784
His Cys Val Ile Asn Lys Thr Ala Thr Gly Tyr Gly Phe Ala Glu Pro
            915             920             925
tat aac ttg tac agc tct ctg aaa gaa ctg gtg cta cat tac caa cac        2832
Tyr Asn Leu Tyr Ser Ser Leu Lys Glu Leu Val Leu His Tyr Gln His
            930             935             940
acc tcc ctt gtg cag cac aac gac tcc ctc aat gtc aca cta gcc tac        2880
Thr Ser Leu Val Gln His Asn Asp Ser Leu Asn Val Thr Leu Ala Tyr
945             950             955                 960
cca gta tat gca cag cag agg cga tga                                    2907
Pro Val Tyr Ala Gln Gln Arg Arg
            965
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<210> 49

<211> 968

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-p85alpha fusion

<400> 49

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1               5               10              15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20              25              30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35              40              45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50              55              60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65              70              75              80
```

35

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Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                 85                    90                    95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100               105               110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115               120               125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130               135               140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145               150               155               160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
            165               170               175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180               185               190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195               200               205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210               215               220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225               230               235               240
Gly Leu Arg Ser Met Ser Ala Glu Gly Tyr Gln Tyr Arg Ala Leu Tyr
            245               250               255
Asp Tyr Lys Lys Glu Arg Glu Glu Asp Ile Asp Leu His Leu Gly Asp
        260               265               270
Ile Leu Thr Val Asn Lys Gly Ser Leu Val Ala Leu Gly Phe Ser Asp
    275               280               285
Gly Gln Glu Ala Arg Pro Glu Glu Ile Gly Trp Leu Asn Gly Tyr Asn
    290               295               300
Glu Thr Thr Gly Glu Arg Gly Asp Phe Pro Gly Thr Tyr Val Glu Tyr
305               310               315               320
Ile Gly Arg Lys Lys Ile Ser Pro Pro Thr Pro Lys Pro Arg Pro Pro
            325               330               335
Arg Pro Leu Pro Val Ala Pro Gly Ser Ser Lys Thr Glu Ala Asp Val
            340               345               350
Glu Gln Gln Ala Leu Thr Leu Pro Asp Leu Ala Glu Gln Phe Ala Pro
        355               360               365
Pro Asp Ile Ala Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu
    370               375               380
Lys Lys Gly Leu Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser
385               390               395               400
Asn Leu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val
            405               410               415
Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg
        420               425               430
Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser
    435               440               445
Glu Met Ile Ser Leu Ala Pro Glu Val Gln Ser Ser Glu Glu Tyr Ile
    450               455               460
Gln Leu Leu Lys Lys Leu Ile Arg Ser Pro Ser Ile Pro His Gln Tyr
465               470               475               480
Trp Leu Thr Leu Gln Tyr Leu Leu Lys His Phe Phe Lys Leu Ser Gln
            485               490               495
Thr Ser Ser Lys Asn Leu Leu Asn Ala Arg Val Leu Ser Glu Ile Phe
        500               505               510
Ser Pro Met Leu Phe Arg Phe Ser Ala Ala Ser Ser Asp Asn Thr Glu
    515               520               525
Asn Leu Ile Lys Val Ile Glu Ile Leu Ile Ser Thr Glu Trp Asn Glu
    530               535               540
Arg Gln Pro Ala Pro Ala Leu Pro Pro Lys Pro Pro Lys Pro Thr Thr
545               550               555               560
Val Ala Asn Asn Gly Met Asn Asn Asn Met Ser Leu Gln Asn Ala Glu
            565               570               575
Trp Tyr Trp Gly Asp Ile Ser Arg Glu Glu Val Asn Glu Lys Leu Arg
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36

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                  580                      585                      590
Asp Thr Ala Asp Gly Thr Phe Leu Val Arg Asp Ala Ser Thr Lys Met
            595                      600                      605
His Gly Asp Tyr Thr Leu Thr Leu Arg Lys Gly Gly Asn Asn Lys Leu
    610                      615                      620
Ile Lys Ile Phe His Arg Asp Gly Lys Tyr Gly Phe Ser Asp Pro Leu
625                      630                      635                      640
Thr Phe Ser Ser Val Val Glu Leu Ile Asn His Tyr Arg Asn Glu Ser
                645                      650                      655
Leu Ala Gln Tyr Asn Pro Lys Leu Asp Val Lys Leu Leu Tyr Pro Val
                660                      665                      670
Ser Lys Tyr Gln Gln Asp Gln Val Val Lys Glu Asp Asn Ile Glu Ala
            675                      680                      685
Val Gly Lys Lys Leu His Glu Tyr Asn Thr Gln Phe Gln Glu Lys Ser
    690                      695                      700
Arg Glu Tyr Asp Arg Leu Tyr Glu Glu Tyr Thr Arg Thr Ser Gln Glu
705                      710                      715                      720
Ile Gln Met Lys Arg Thr Ala Ile Glu Ala Phe Asn Glu Thr Ile Lys
                725                      730                      735
Ile Phe Glu Glu Gln Cys Gln Thr Gln Glu Arg Tyr Ser Lys Glu Tyr
                740                      745                      750
Ile Glu Lys Phe Lys Arg Glu Gly Asn Glu Lys Glu Ile Gln Arg Ile
            755                      760                      765
Met His Asn Tyr Asp Lys Leu Lys Ser Arg Ile Ser Glu Ile Ile Asp
    770                      775                      780
Ser Arg Arg Arg Leu Glu Glu Asp Leu Lys Lys Gln Ala Ala Glu Tyr
785                      790                      795                      800
Arg Glu Ile Asp Lys Arg Met Asn Ser Ile Lys Pro Asp Leu Ile Gln
                805                      810                      815
Leu Arg Lys Thr Arg Asp Gln Tyr Leu Met Trp Leu Thr Gln Lys Gly
                820                      825                      830
Val Arg Gln Lys Lys Leu Asn Glu Trp Leu Gly Asn Glu Asn Thr Glu
            835                      840                      845
Asp Gln Tyr Ser Leu Val Glu Asp Asp Glu Asp Leu Pro His His Asp
    850                      855                      860
Glu Lys Thr Trp Asn Val Gly Ser Ser Asn Arg Asn Lys Ala Glu Asn
865                      870                      875                      880
Leu Leu Arg Gly Lys Arg Asp Gly Thr Phe Leu Val Arg Glu Ser Ser
                885                      890                      895
Lys Gln Gly Cys Tyr Ala Cys Ser Val Val Val Asp Gly Glu Val Lys
                900                      905                      910
His Cys Val Ile Asn Lys Thr Ala Thr Gly Tyr Gly Phe Ala Glu Pro
            915                      920                      925
Tyr Asn Leu Tyr Ser Ser Leu Lys Glu Leu Val Leu His Tyr Gln His
    930                      935                      940
Thr Ser Leu Val Gln His Asn Asp Ser Leu Asn Val Thr Leu Ala Tyr
945                      950                      955                      960
Pro Val Tyr Ala Gln Gln Arg Arg
                965


<210>    50

<211>    2160

<212>    DNA

<213>    Artificial Sequence


<220>
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<400> 50

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atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg      48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc      ·96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc     144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc     192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag     240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag     288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag     336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100                 105                 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc     384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
            115                 120                 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac     432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                 135                 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac     480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc     528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc     576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg     624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195                 200                 205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc     672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
        210                 215                 220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc     720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
gga ctc aga tct cga gct caa gct tcg aat tcg acc atg tcg tcc atc     768
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Thr Met Ser Ser Ile
                245                 250                 255
ttg cca ttc acg ccg cca gtt gtg aag aga ctg ctg gga tgg aag aag     816
Leu Pro Phe Thr Pro Pro Val Val Lys Arg Leu Leu Gly Trp Lys Lys
                260                 265                 270
tca gct ggt ggg tct gga gga gca ggc gga gga gag cag aat ggg cag     864
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38

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Ser Ala Gly Gly Ser Gly Gly Ala Gly Gly Gly Glu Gln Asn Gly Gln
        275                     280                 285
gaa gaa aag tgg tgt gag aaa gca gtg aaa agt ctg gtg aag aag cta      912
Glu Glu Lys Trp Cys Glu Lys Ala Val Lys Ser Leu Val Lys Lys Leu
    290                     295                 300
aag aaa aca gga cga tta gat gag ctt gag aaa gcc atc acc act caa      960
Lys Lys Thr Gly Arg Leu Asp Glu Leu Glu Lys Ala Ile Thr Thr Gln
305                     310                 315                 320
aac tgt aat act aaa tgt gtt acc ata cca agc act tgc tct gaa att     1008
Asn Cys Asn Thr Lys Cys Val Thr Ile Pro Ser Thr Cys Ser Glu Ile
                325                 330                 335
tgg gga ctg agt aca cca aat acg ata gat cag tgg gat aca aca ggc     1056
Trp Gly Leu Ser Thr Pro Asn Thr Ile Asp Gln Trp Asp Thr Thr Gly
                340                 345                 350
ctt tac agc ttc tct gaa caa acc agg tct ctt gat ggt cgt ctc cag    1104
Leu Tyr Ser Phe Ser Glu Gln Thr Arg Ser Leu Asp Gly Arg Leu Gln
                355                 360                 365
gta tcc cat cga aaa gga ttg cca cat gtt ata tat tgc cga tta tgg    1152
Val Ser His Arg Lys Gly Leu Pro His Val Ile Tyr Cys Arg Leu Trp
    370                     375                 380
cgc tgg cct gat ctt cac agt cat cat gaa ctc aag gca att gaa aac    1200
Arg Trp Pro Asp Leu His Ser His His Glu Leu Lys Ala Ile Glu Asn
385                     390                 395                 400
tgc gaa tat gct ttt aat ctt aaa aag gat gaa gta tgt gta aac cct    1248
Cys Glu Tyr Ala Phe Asn Leu Lys Lys Asp Glu Val Cys Val Asn Pro
                405                 410                 415
tac cac tat cag aga gtt gag aca cca gtt ttg cct cca gta tta gtg    1296
Tyr His Tyr Gln Arg Val Glu Thr Pro Val Leu Pro Pro Val Leu Val
                420                 425                 430
ccc cga cac acc gag atc cta aca gaa ctt ccg cct ctg gat gac tat    1344
Pro Arg His Thr Glu Ile Leu Thr Glu Leu Pro Pro Leu Asp Asp Tyr
    435                     440                 445
act cac tcc att cca gaa aac act aac ttc cca gca gga att gag cca    1392
Thr His Ser Ile Pro Glu Asn Thr Asn Phe Pro Ala Gly Ile Glu Pro
    450                     455                 460
cag agt aat tat att cca gaa acg cca cct cct gga tat atc agt gaa    1440
Gln Ser Asn Tyr Ile Pro Glu Thr Pro Pro Pro Gly Tyr Ile Ser Glu
465                     470                 475                 480
gat gga gaa aca agt gac caa cag ttg aat caa agt atg gac aca ggc    1488
Asp Gly Glu Thr Ser Asp Gln Gln Leu Asn Gln Ser Met Asp Thr Gly
                485                 490                 495
tct cca gca gaa cta tct cct act act ctt tcc cct gtt aat cat agc    1536
Ser Pro Ala Glu Leu Ser Pro Thr Thr Leu Ser Pro Val Asn His Ser
                500                 505                 510
ttg gat tta cag cca gtt act tac tca gaa cct gca ttt tgg tgt tca    1584
Leu Asp Leu Gln Pro Val Thr Tyr Ser Glu Pro Ala Phe Trp Cys Ser
                515                 520                 525
ata gca tat tat gaa tta aat cag agg gtt gga gaa acc ttc cat gca    1632
Ile Ala Tyr Tyr Glu Leu Asn Gln Arg Val Gly Glu Thr Phe His Ala
    530                     535                 540
tca cag ccc tca ctc act gta gat ggc ttt aca gac cca tca aat tca    1680
Ser Gln Pro Ser Leu Thr Val Asp Gly Phe Thr Asp Pro Ser Asn Ser
545                     550                 555                 560
gag agg ttc tgc tta ggt tta ctc tcc aat gtt aac cga aat gcc acg    1728
Glu Arg Phe Cys Leu Gly Leu Leu Ser Asn Val Asn Arg Asn Ala Thr
                565                 570                 575
gta gaa atg aca aga agg cat ata gga aga gga gtg cgc tta tac tac    1776
Val Glu Met Thr Arg Arg His Ile Gly Arg Gly Val Arg Leu Tyr Tyr
                580                 585                 590
ata ggt ggg gaa gtt ttt gct gag tgc cta agt gat agt gca atc ttt    1824
Ile Gly Gly Glu Val Phe Ala Glu Cys Leu Ser Asp Ser Ala Ile Phe
                595                 600                 605
gtg cag agc ccc aat tgt aat cag aga tat ggc tgg cac cct gca aca    1872
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39

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        Val Gln Ser Pro Asn Cys Asn Gln Arg Tyr Gly Trp His Pro Ala Thr
            610                 615                 620
gtg tgt aaa att cca cca ggc tgt aat ctg aag atc ttc aac aac cag        1920
Val Cys Lys Ile Pro Pro Gly Cys Asn Leu Lys Ile Phe Asn Asn Gln
625                 630                 635                 640
gaa ttt gct gct ctt ctg gct cag tct gtt aat cag ggt ttt gaa gcc        1968
Glu Phe Ala Ala Leu Leu Ala Gln Ser Val Asn Gln Gly Phe Glu Ala
                645                 650                 655
gtc tat cag cta act aga atg tgc acc ata aga atg agt ttt gtg aaa        2016
Val Tyr Gln Leu Thr Arg Met Cys Thr Ile Arg Met Ser Phe Val Lys
                660                 665                 670
ggg tgg gga gca gaa tac cga agg cag acg gta aca agt act cct tgc        2064
Gly Trp Gly Ala Glu Tyr Arg Arg Gln Thr Val Thr Ser Thr Pro Cys
            675                 680                 685
tgg att gaa ctt cat ctg aat gga cct cta cag tgg ttg gac aaa gta        2112
Trp Ile Glu Leu His Leu Asn Gly Pro Leu Gln Trp Leu Asp Lys Val
        690                 695                 700
tta act cag atg gga tcc cct tca gtg cgt tgc tca agc atg tca taa        2160
Leu Thr Gln Met Gly Ser Pro Ser Val Arg Cys Ser Ser Met Ser
705                 710                 715
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<210>   51

<211>   719

<212>   PRT

<213>   Artificial Sequence

<220>

<223>   EGFP-Smad2 fusion

<400>   51

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Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20                  25                  30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35                  40                  45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50                  55                  60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100                 105                 110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115                 120                 125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130                 135                 140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
```

40

```
              195                    200                    205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                    215                    220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                    230                    235                    240
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Thr Met Ser Ser Ile
                245                    250                    255
Leu Pro Phe Thr Pro Pro Val Val Lys Arg Leu Leu Gly Trp Lys Lys
            260                    265                    270
Ser Ala Gly Gly Ser Gly Gly Ala Gly Gly Gly Glu Gln Asn Gly Gln
        275                    280                    285
Glu Glu Lys Trp Cys Glu Lys Ala Val Lys Ser Leu Val Lys Lys Leu
    290                    295                    300
Lys Lys Thr Gly Arg Leu Asp Glu Leu Glu Lys Ala Ile Thr Thr Gln
305                    310                    315                    320
Asn Cys Asn Thr Lys Cys Val Thr Ile Pro Ser Thr Cys Ser Glu Ile
                325                    330                    335
Trp Gly Leu Ser Thr Pro Asn Thr Ile Asp Gln Trp Asp Thr Thr Gly
            340                    345                    350
Leu Tyr Ser Phe Ser Glu Gln Thr Arg Ser Leu Asp Gly Arg Leu Gln
        355                    360                    365
Val Ser His Arg Lys Gly Leu Pro His Val Ile Tyr Cys Arg Leu Trp
    370                    375                    380
Arg Trp Pro Asp Leu His Ser His His Glu Leu Lys Ala Ile Glu Asn
385                    390                    395                    400
Cys Glu Tyr Ala Phe Asn Leu Lys Lys Asp Glu Val Cys Val Asn Pro
                405                    410                    415
Tyr His Tyr Gln Arg Val Glu Thr Pro Val Leu Pro Pro Val Leu Val
            420                    425                    430
Pro Arg His Thr Glu Ile Leu Thr Glu Leu Pro Pro Leu Asp Asp Tyr
        435                    440                    445
Thr His Ser Ile Pro Glu Asn Thr Asn Phe Pro Ala Gly Ile Glu Pro
    450                    455                    460
Gln Ser Asn Tyr Ile Pro Glu Thr Pro Pro Pro Gly Tyr Ile Ser Glu
465 .                  470                    475                    480
Asp Gly Glu Thr Ser Asp Gln Gln Leu Asn Gln Ser Met Asp Thr Gly
            485                    490                    495
Ser Pro Ala Glu Leu Ser Pro Thr Thr Leu Ser Pro Val Asn His Ser
        500                    505                    510
Leu Asp Leu Gln Pro Val Thr Tyr Ser Glu Pro Ala Phe Trp Cys Ser
    515                    520                    525
Ile Ala Tyr Tyr Glu Leu Asn Gln Arg Val Gly Glu Thr Phe His Ala
    530                    535                    540
Ser Gln Pro Ser Leu Thr Val Asp Gly Phe Thr Asp Pro Ser Asn Ser
545                    550                    555                    560
Glu Arg Phe Cys Leu Gly Leu Leu Ser Asn Val Asn Arg Asn Ala Thr
                565                    570                    575
Val Glu Met Thr Arg Arg His Ile Gly Arg Gly Val Arg Leu Tyr Tyr
            580                    585                    590
Ile Gly Gly Glu Val Phe Ala Glu Cys Leu Ser Asp Ser Ala Ile Phe
        595                    600                    605
Val Gln Ser Pro Asn Cys Asn Gln Arg Tyr Gly Trp His Pro Ala Thr
    610                    615                    620
Val Cys Lys Ile Pro Pro Gly Cys Asn Leu Lys Ile Phe Asn Asn Gln
625                    630                    635                    640
Glu Phe Ala Ala Leu Leu Ala Gln Ser Val Asn Gln Gly Phe Glu Ala
                645                    650                    655
Val Tyr Gln Leu Thr Arg Met Cys Thr Ile Arg Met Ser Phe Val Lys
            660                    665                    670
Gly Trp Gly Ala Glu Tyr Arg Arg Gln Thr Val Thr Ser Thr Pro Cys
        675                    680                    685
Trp Ile Glu Leu His Leu Asn Gly Pro Leu Gln Trp Leu Asp Lys Val
    690                    695                    700
```

41

Leu Thr Gln Met Gly Ser Pro Ser Val Arg Cys Ser Ser Met Ser
705   710   715

<210>   52

<211>   2421

<212>   DNA

<213>   Artificial Sequence

<220>

<223>   EGFP-Smad4 fusion

<220>

<221>   CDS

<222>   (1)..(2418)

<400>   52
atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg   48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1   5   10   15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc   96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20   25   30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc   144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35   40   45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc   192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50   55   60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag   240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65   70   75   80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag   288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85   90   95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag   336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100   105   110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc   384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
            115   120   125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac   432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130   135   140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac   480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145   150   155   160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc   528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165   170   175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc   576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180   185   190

42

```
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg        624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195                     200                     205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc        672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                     215                     220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc        720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                     230                     235                 240
gga ctc aga tct cga gct caa gct tcg aat tcg aat tca acc atg gac        768
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Asn Ser Thr Met Asp
                245                     250                     255
aat atg tct att acg aat aca cca aca agt aat gat gcc tgt ctg agc        816
Asn Met Ser Ile Thr Asn Thr Pro Thr Ser Asn Asp Ala Cys Leu Ser
                260                     265                     270
att gtg cat agt ttg atg tgc cat aga caa ggt gga gag agt gaa aca        864
Ile Val His Ser Leu Met Cys His Arg Gln Gly Gly Glu Ser Glu Thr
                275                     280                     285
ttt gca aaa aga gca att gaa agt ttg gta aag aag ctg aag gag aaa        912
Phe Ala Lys Arg Ala Ile Glu Ser Leu Val Lys Lys Leu Lys Glu Lys
        290                     295                     300
aaa gat gaa ttg gat tct tta ata aca gct ata act aca aat gga gct        960
Lys Asp Glu Leu Asp Ser Leu Ile Thr Ala Ile Thr Thr Asn Gly Ala
305                     310                     315                 320
cat cct agt aaa tgt gtt acc ata cag aga aca ttg gat ggg agg ctt       1008
His Pro Ser Lys Cys Val Thr Ile Gln Arg Thr Leu Asp Gly Arg Leu
                325                     330                     335
cag gtg gct ggt cgg aaa gga ttt cct cat gtg atc tat gcc cgt ctc       1056
Gln Val Ala Gly Arg Lys Gly Phe Pro His Val Ile Tyr Ala Arg Leu
                340                     345                     350
tgg agg tgg cct gat ctt cac aaa aat gaa cta aaa cat gtt aaa tat       1104
Trp Arg Trp Pro Asp Leu His Lys Asn Glu Leu Lys His Val Lys Tyr
                355                     360                     365
tgt cag tat gcg ttt gac tta aaa tgt gat agt gtc tgt gtg aat cca       1152
Cys Gln Tyr Ala Phe Asp Leu Lys Cys Asp Ser Val Cys Val Asn Pro
        370                     375                     380
tat cac tac gaa cga gtt gta tca cct gga att gat ctc tca gga tta       1200
Tyr His Tyr Glu Arg Val Val Ser Pro Gly Ile Asp Leu Ser Gly Leu
385                     390                     395                 400
aca ctg cag agt aat gct cca tca agt atg atg gtg aag gat gaa tat       1248
Thr Leu Gln Ser Asn Ala Pro Ser Ser Met Met Val Lys Asp Glu Tyr
                405                     410                     415
gtg cat gac ttt gag gga cag cca tcg ttg tcc act gaa gga cat tca       1296
Val His Asp Phe Glu Gly Gln Pro Ser Leu Ser Thr Glu Gly His Ser
                420                     425                     430
att caa acc atc cag cat cca cca agt aat cgt gca tcg aca gag aca       1344
Ile Gln Thr Ile Gln His Pro Pro Ser Asn Arg Ala Ser Thr Glu Thr
        435                     440                     445
tac agc acc cca gct ctg tta gcc cca tct gag tct aat gct acc agc       1392
Tyr Ser Thr Pro Ala Leu Leu Ala Pro Ser Glu Ser Asn Ala Thr Ser
        450                     455                     460
act gcc aac ttt ccc aac att cct gtg gct tcc aca agt cag cct gcc       1440
Thr Ala Asn Phe Pro Asn Ile Pro Val Ala Ser Thr Ser Gln Pro Ala
465                     470                     475                 480
agt ata ctg ggg ggc agc cat agt gaa gga ctg ttg cag ata gca tca       1488
Ser Ile Leu Gly Gly Ser His Ser Glu Gly Leu Leu Gln Ile Ala Ser
                485                     490                     495
ggg cct cag cca gga cag cag cag aat gga ttt act ggt cag cca gct       1536
Gly Pro Gln Pro Gly Gln Gln Gln Asn Gly Phe Thr Gly Gln Pro Ala
                500                     505                     510
act tac cat cat aac agc act acc acc tgg act gga agt agg act gca       1584
Thr Tyr His His Asn Ser Thr Thr Thr Trp Thr Gly Ser Arg Thr Ala
                515                     520                     525
```

43

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cca tac aca cct aat ttg cct cac cac caa aac ggc cat ctt cag cac        1632
Pro Tyr Thr Pro Asn Leu Pro His His Gln Asn Gly His Leu Gln His
    530                 535                 540
cac ccg cct atg ccg ccc cat ccc gga cat tac tgg cct gtt cac aat        1680
His Pro Pro Met Pro Pro His Pro Gly His Tyr Trp Pro Val His Asn
545                 550                 555                 560
gag ctt gca ttc cag cct ccc att tcc aat cat cct gct cct gag tat        1728
Glu Leu Ala Phe Gln Pro Pro Ile Ser Asn His Pro Ala Pro Glu Tyr
                565                 570                 575
tgg tgt tcc att gct tac ttt gaa atg gat gtt cag gta gga gag aca        1776
Trp Cys Ser Ile Ala Tyr Phe Glu Met Asp Val Gln Val Gly Glu Thr
            580                 585                 590
ttt aag gtt cct tca agc tgc cct att gtt act gtt gat gga tac gtg        1824
Phe Lys Val Pro Ser Ser Cys Pro Ile Val Thr Val Asp Gly Tyr Val
        595                 600                 605
gac cct tct gga gga gat cgc ttt tgt ttg ggt caa ctc tcc aat gtc        1872
Asp Pro Ser Gly Gly Asp Arg Phe Cys Leu Gly Gln Leu Ser Asn Val
    610                 615                 620
cac agg aca gaa gcc att gag aga gca agg ttg cac ata ggc aaa ggt        1920
His Arg Thr Glu Ala Ile Glu Arg Ala Arg Leu His Ile Gly Lys Gly
625                 630                 635                 640
gtg cag ttg gaa tgt aaa ggt gaa ggt gat gtt tgg gtc agg tgc ctt        1968
Val Gln Leu Glu Cys Lys Gly Glu Gly Asp Val Trp Val Arg Cys Leu
                645                 650                 655
agt gac cac gcg gtc ttt gta cag agt tac tac tta gac aga gaa gct        2016
Ser Asp His Ala Val Phe Val Gln Ser Tyr Tyr Leu Asp Arg Glu Ala
            660                 665                 670
ggg cgt gca cct gga gat gct gtt cat aag atc tac cca agt gca tat        2064
Gly Arg Ala Pro Gly Asp Ala Val His Lys Ile Tyr Pro Ser Ala Tyr
        675                 680                 685
ata aag gtc ttt gat ttg cgt cag tgt cat cga cag atg cag cag cag        2112
Ile Lys Val Phe Asp Leu Arg Gln Cys His Arg Gln Met Gln Gln Gln
    690.                695                 700
gcg gct act gca caa gct gca gca gct gcc cag gca gca gcc gtg gca        2160
Ala Ala Thr Ala Gln Ala Ala Ala Ala Ala Gln Ala Ala Ala Val Ala
705                 710                 715                 720
gga aac atc cct ggc cca gga tca gta ggt gga ata gct cca gct atc        2208
Gly Asn Ile Pro Gly Pro Gly Ser Val Gly Gly Ile Ala Pro Ala Ile
                725                 730                 735
agt ctg tca gct gct gct gga att ggt gtt gat gac ctt cgt cgc tta        2256
Ser Leu Ser Ala Ala Ala Gly Ile Gly Val Asp Asp Leu Arg Arg Leu
            740                 745                 750
tgc ata ctc agg atg agt ttt gtg aaa ggc tgg gga ccg gat tac cca        2304
Cys Ile Leu Arg Met Ser Phe Val Lys Gly Trp Gly Pro Asp Tyr Pro
            755                 760                 765
aga cag agc atc aaa gaa aca cct tgc tgg att gaa att cac tta cac        2352
Arg Gln Ser Ile Lys Glu Thr Pro Cys Trp Ile Glu Ile His Leu His
    770                 775                 780
cgg gcc ctc cag ctc cta gac gaa gta ctt cat acc atg ccg att gca        2400
Arg Ala Leu Gln Leu Leu Asp Glu Val Leu His Thr Met Pro Ile Ala
785                 790                 795                 800
gac cca caa cct tta gac tga                                            2421
Asp Pro Gln Pro Leu Asp
                805
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<210> 53

<211> 806

<212> PRT

44

<213> Artificial Sequence

<220>

<223> EGFP-Smad4 fusion

<400> 53

Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1   5   10   15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20   25   30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35   40   45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50   55   60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65   70   75   80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85   90   95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100   105   110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115   120   125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130   135   140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145   150   155   160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165   170   175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180   185   190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195   200   205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210   215   220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225   230   235   240
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Asn Ser Thr Met Asp
                245   250   255
Asn Met Ser Ile Thr Asn Thr Pro Thr Ser Asn Asp Ala Cys Leu Ser
                260   265   270
Ile Val His Ser Leu Met Cys His Arg Gln Gly Gly Glu Ser Glu Thr
            275   280   285
Phe Ala Lys Arg Ala Ile Glu Ser Leu Val Lys Lys Leu Lys Glu Lys
    290   295   300
Lys Asp Glu Leu Asp Ser Leu Ile Thr Ala Ile Thr Thr Asn Gly Ala
305   310   315   320
His Pro Ser Lys Cys Val Thr Ile Gln Arg Thr Leu Asp Gly Arg Leu
                325   330   335
Gln Val Ala Gly Arg Lys Gly Phe Pro His Val Ile Tyr Ala Arg Leu
            340   345   350
Trp Arg Trp Pro Asp Leu His Lys Asn Glu Leu Lys His Val Lys Tyr
            355   360   365
Cys Gln Tyr Ala Phe Asp Leu Lys Cys Asp Ser Val Cys Val Asn Pro
    370   375   380
Tyr His Tyr Glu Arg Val Ser Pro Gly Ile Asp Leu Ser Gly Leu
385   390   395   400
Thr Leu Gln Ser Asn Ala Pro Ser Ser Met Val Lys Asp Glu Tyr
            405   410   415
Val His Asp Phe Glu Gly Gln Pro Ser Leu Ser Thr Glu Gly His Ser

45

```
                420                      425                      430
Ile Gln Thr Ile Gln His Pro Pro Ser Asn Arg Ala Ser Thr Glu Thr
        435                      440                      445
Tyr Ser Thr Pro Ala Leu Leu Ala Pro Ser Glu Ser Asn Ala Thr Ser
        450                      455                      460
Thr Ala Asn Phe Pro Asn Ile Pro Val Ala Ser Thr Ser Gln Pro Ala
465                      470                      475                      480
Ser Ile Leu Gly Gly Ser His Ser Glu Gly Leu Leu Gln Ile Ala Ser
                485                      490                      495
Gly Pro Gln Pro Gly Gln Gln Gln Asn Gly Phe Thr Gly Gln Pro Ala
            500                      505                      510
Thr Tyr His His Asn Ser Thr Thr Thr Trp Thr Gly Ser Arg Thr Ala
        515                      520                      525
Pro Tyr Thr Pro Asn Leu Pro His His Gln Asn Gly His Leu Gln His
        530                      535                      540
His Pro Pro Met Pro Pro His Pro Gly His Tyr Trp Pro Val His Asn
545                      550                      555                      560
Glu Leu Ala Phe Gln Pro Pro Ile Ser Asn His Pro Ala Pro Glu Tyr
                565                      570                      575
Trp Cys Ser Ile Ala Tyr Phe Glu Met Asp Val Gln Val Gly Glu Thr
            580                      585                      590
Phe Lys Val Pro Ser Ser Cys Pro Ile Val Thr Val Asp Gly Tyr Val
        595                      600                      605
Asp Pro Ser Gly Gly Asp Arg Phe Cys Leu Gly Gln Leu Ser Asn Val
    610                      615                      620
His Arg Thr Glu Ala Ile Glu Arg Ala Arg Leu His Ile Gly Lys Gly
625                      630                      635                      640
Val Gln Leu Glu Cys Lys Gly Glu Gly Asp Val Trp Val Arg Cys Leu
                645                      650                      655
Ser Asp His Ala Val Phe Val Gln Ser Tyr Tyr Leu Asp Arg Glu Ala
            660                      665                      670
Gly Arg Ala Pro Gly Asp Ala Val His Lys Ile Tyr Pro Ser Ala Tyr
        675                      680                      685
Ile Lys Val Phe Asp Leu Arg Gln Cys His Arg Gln Met Gln Gln Gln
    690                      695                      700
Ala Ala Thr Ala Gln Ala Ala Ala Ala Gln Ala Ala Ala Val Ala
705                      710                      715                      720
Gly Asn Ile Pro Gly Pro Gly Ser Val Gly Gly Ile Ala Pro Ala Ile
                725                      730                      735
Ser Leu Ser Ala Ala Ala Gly Ile Gly Val Asp Asp Leu Arg Arg Leu
            740                      745                      750
Cys Ile Leu Arg Met Ser Phe Val Lys Gly Trp Gly Pro Asp Tyr Pro
        755                      760                      765
Arg Gln Ser Ile Lys Glu Thr Pro Cys Trp Ile Glu Ile His Leu His
    770                      775                      780
Arg Ala Leu Gln Leu Leu Asp Glu Val Leu His Thr Met Pro Ile Ala
785                      790                      795                      800
Asp Pro Gln Pro Leu Asp
                805
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<210> 54

<211> 3120

<212> DNA

<213> Artificial Sequence

<220>

<220>

<223> EGFP-Stat5 fusion

<220>

<221> CDS

<222> (1)..(3117)

.

<400> 54

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atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg      48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc      96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc     144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc     192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag     240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag     288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag     336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100                 105                 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc     384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115                 120                 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac     432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                 135                 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac     480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc     528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc     576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg     624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195                 200                 205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc     672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
        210                 215                 220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc     720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
gga ctc aga tct acc atg gcg ggc tgg atc cag gcc cag cag ctg cag     768
Gly Leu Arg Ser Thr Met Ala Gly Trp Ile Gln Ala Gln Gln Leu Gln
                245                 250                 255
gga gac gcg ctg cgc cag atg cag gtg ctg tac ggc cag cac ttc ccc     816
Gly Asp Ala Leu Arg Gln Met Gln Val Leu Tyr Gly Gln His Phe Pro
            260                 265                 270
atc gag gtc cgg cac tac ttg gcc cag tgg att gag agc cag cca tgg     864
```

47

```
Ile Glu Val Arg His Tyr Leu Ala Gln Trp Ile Glu Ser Gln Pro Trp
    275                         280                 285
gat gcc att gac ttg gac aat ccc cag gac aga gcc caa gcc acc cag          912
Asp Ala Ile Asp Leu Asp Asn Pro Gln Asp Arg Ala Gln Ala Thr Gln
    290                         295                 300
ctc ctg gag ggc ctg gtg cag gag ctg cag aag aag gcg gag cac cag          960
Leu Leu Glu Gly Leu Val Gln Glu Leu Gln Lys Lys Ala Glu His Gln
305                         310                 315                 320
gtg ggg gaa gat ggg ttt tta ctg aag atc aag ctg ggg cac tac gcc         1008
Val Gly Glu Asp Gly Phe Leu Leu Lys Ile Lys Leu Gly His Tyr Ala
                        325                 330                 335
acg cag ctc cag aaa aca tat gac cgc tgc ccc ctg gag ctg gtc cgc         1056
Thr Gln Leu Gln Lys Thr Tyr Asp Arg Cys Pro Leu Glu Leu Val Arg
                340                 345                 350
tgc atc cgg cac att ctg tac aat gaa cag agg ctg gtc cga gaa gcc         1104
Cys Ile Arg His Ile Leu Tyr Asn Glu Gln Arg Leu Val Arg Glu Ala
            355                 360                 365
aac aat tgc agc tct ccg gct ggg atc ctg gtt gac gcc atg tcc cag         1152
Asn Asn Cys Ser Ser Pro Ala Gly Ile Leu Val Asp Ala Met Ser Gln
        370                 375                 380
aag cac ctt cag atc aac cag aca ttt gag gag ctg cga ctg gtc acg         1200
Lys His Leu Gln Ile Asn Gln Thr Phe Glu Glu Leu Arg Leu Val Thr
385                 390                 395                 400
cag gac aca gag aat gag ctg aag aaa ctg cag cag act cag gag tac         1248
Gln Asp Thr Glu Asn Glu Leu Lys Lys Leu Gln Gln Thr Gln Glu Tyr
                405                 410                 415
ttc atc atc cag tac cag gag agc ctg agg atc caa gct cag ttt gcc         1296
Phe Ile Ile Gln Tyr Gln Glu Ser Leu Arg Ile Gln Ala Gln Phe Ala
                420                 425                 430
cag ctg gcc cag ctg agc ccc cag gag cgt ctg agc cgg gag acg gcc         1344
Gln Leu Ala Gln Leu Ser Pro Gln Glu Arg Leu Ser Arg Glu Thr Ala
            435                 440                 445
ctc cag cag aag cag gtg tct ctg gag gcc tgg ttg cag cgt gag gca         1392
Leu Gln Gln Lys Gln Val Ser Leu Glu Ala Trp Leu Gln Arg Glu Ala
        450                 455                 460
cag aca ctg cag cag tac cgc gtg gag ctg gcc gag aag cac cag aag         1440
Gln Thr Leu Gln Gln Tyr Arg Val Glu Leu Ala Glu Lys His Gln Lys
465                 470                 475                 480
acc ctg cag ctg ctg cgg aag cag cag acc atc atc ctg gat gac gag         1488
Thr Leu Gln Leu Leu Arg Lys Gln Gln Thr Ile Ile Leu Asp Asp Glu
                485                 490                 495
ctg atc cag tgg aag cgg cgg cag cag ctg gcc ggg aac ggc ggg ccc         1536
Leu Ile Gln Trp Lys Arg Arg Gln Gln Leu Ala Gly Asn Gly Gly Pro
            500                 505                 510
ccc gag ggc agc ctg gac gtg cta cag tcc tgg tgt gag aag ttg gcc         1584
Pro Glu Gly Ser Leu Asp Val Leu Gln Ser Trp Cys Glu Lys Leu Ala
            515                 520                 525
gag atc atc tgg cag aac cgg cag cag atc cgc agg gct gag cac ctc         1632
Glu Ile Ile Trp Gln Asn Arg Gln Gln Ile Arg Arg Ala Glu His Leu
        530                 535                 540
tgc cag cag ctg ccc atc ccc ggc cca gtg gag gag atg ctg gcc gag         1680
Cys Gln Gln Leu Pro Ile Pro Gly Pro Val Glu Glu Met Leu Ala Glu
545                 550                 555                 560
gtc aac gcc acc atc acg gac att atc tca gcc ctg gtg acc agc aca         1728
Val Asn Ala Thr Ile Thr Asp Ile Ile Ser Ala Leu Val Thr Ser Thr
                565                 570                 575
ttc atc att gag aag cag cct cct cag gtc ctg aag acc cag acc aag         1776
Phe Ile Ile Glu Lys Gln Pro Pro Gln Val Leu Lys Thr Gln Thr Lys
                580                 585                 590
ttt gca gcc acc gta cgc ctg ctg gtg ggc ggg aag ctg aac gtg cac         1824
Phe Ala Ala Thr Val Arg Leu Leu Val Gly Gly Lys Leu Asn Val His
            595                 600                 605
atg aat ccc ccc cag gtg aag gcc acc atc atc agt gag cag cag gcc         1872
```

48

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Met Asn Pro Pro Gln Val Lys Ala Thr Ile Ile Ser Glu Gln Gln Ala
    610               615               620
aag tct ctg ctt aaa aat gag aac acc cgc aac gag tgc agt ggt gag      1920
Lys Ser Leu Leu Lys Asn Glu Asn Thr Arg Asn Glu Cys Ser Gly Glu
625               630               635               640
atc ctg aac aac tgc tgc gtg atg gag tac cac caa gcc acg ggc acc      1968
Ile Leu Asn Asn Cys Cys Val Met Glu Tyr His Gln Ala Thr Gly Thr
                  645               650               655
ctc agt gcc cac ttc agg aac atg tca ctg aag agg atc aag cgt gct      2016
Leu Ser Ala His Phe Arg Asn Met Ser Leu Lys Arg Ile Lys Arg Ala
                  660               665               670
gac cgg cgg ggt gca gag tcc gtg aca gag gag aag ttc aca gtc ctg      2064
Asp Arg Arg Gly Ala Glu Ser Val Thr Glu Glu Lys Phe Thr Val Leu
          675               680               685
ttt gag tct cag ttc agt gtt ggc agc aat gag ctt gtg ttc cag gtg      2112
Phe Glu Ser Gln Phe Ser Val Gly Ser Asn Glu Leu Val Phe Gln Val
          690               695               700
aag act ctg tcc cta cct gtg gtt gtc atc gtc cac ggc agc cag gac      2160
Lys Thr Leu Ser Leu Pro Val Val Val Ile Val His Gly Ser Gln Asp
705               710               715               720
cac aat gcc acg gct act gtg ctg tgg gac aat gcc ttt gct gag ccg      2208
His Asn Ala Thr Ala Thr Val Leu Trp Asp Asn Ala Phe Ala Glu Pro
                  725               730               735
ggc agg gtg cca ttt gcc gtg cct gac aaa gtg ctg tgg ccg cag ctg      2256
Gly Arg Val Pro Phe Ala Val Pro Asp Lys Val Leu Trp Pro Gln Leu
                  740               745               750
tgt gag gcg ctc aac atg aaa ttc aag gcc gaa gtg cag agc aac cgg      2304
Cys Glu Ala Leu Asn Met Lys Phe Lys Ala Glu Val Gln Ser Asn Arg
          755               760               765
ggc ctg acc aag gag aac ctc gtg ttc ctg gcg cag aaa ctg ttc aac      2352
Gly Leu Thr Lys Glu Asn Leu Val Phe Leu Ala Gln Lys Leu Phe Asn
          770               775               780
aac agc agc agc cac ctg gag gac tac agt ggc ctg tcc gtg tcc tgg      2400
Asn Ser Ser Ser His Leu Glu Asp Tyr Ser Gly Leu Ser Val Ser Trp
785               790               795               800
tcc cag ttc aac agg gag aac ttg ccg ggc tgg aac tac acc ttc tgg      2448
Ser Gln Phe Asn Arg Glu Asn Leu Pro Gly Trp Asn Tyr Thr Phe Trp
                  805               810               815
cag tgg ttt gac ggg gtg atg gag gtg ttg aag aag cac cac aag ccc      2496
Gln Trp Phe Asp Gly Val Met Glu Val Leu Lys Lys His His Lys Pro
                  820               825               830
cac tgg aat gat ggg gcc atc cta ggt ttt gtg aat aag caa cag gcc      2544
His Trp Asn Asp Gly Ala Ile Leu Gly Phe Val Asn Lys Gln Gln Ala
                  835               840               845
cac gac ctg ctc atc aac aag ccc gac ggg acc ttc ttg ttg cgc ttt      2592
His Asp Leu Leu Ile Asn Lys Pro Asp Gly Thr Phe Leu Leu Arg Phe
          850               855               860
agt gac tca gaa atc ggg ggc atc acc atc gcc tgg aag ttt gac tcc      2640
Ser Asp Ser Glu Ile Gly Gly Ile Thr Ile Ala Trp Lys Phe Asp Ser
865               870               875               880
ccg gaa cgc aac ctg tgg aac ctg aaa cca ttc acc acg cgg gat ttc      2688
Pro Glu Arg Asn Leu Trp Asn Leu Lys Pro Phe Thr Thr Arg Asp Phe
                  885               890               895
tcc atc agg tcc ctg gct gac cgg ctg ggg gac ctg agc tat ctc atc      2736
Ser Ile Arg Ser Leu Ala Asp Arg Leu Gly Asp Leu Ser Tyr Leu Ile
                  900               905               910
tat gtg ttt cct gac cgc ccc aag gat gag gtc ttc tcc aag tac tac      2784
Tyr Val Phe Pro Asp Arg Pro Lys Asp Glu Val Phe Ser Lys Tyr Tyr
          915               920               925
act cct gtg ctg gct aaa gct gtt gat gga tat gtg aaa cca cag atc      2832
Thr Pro Val Leu Ala Lys Ala Val Asp Gly Tyr Val Lys Pro Gln Ile
930               935               940.
aag caa gtg gtc cct gag ttt gtg aat gca tct gca gat gct ggg ggc      2880
```

49

```
Lys Gln Val Val Pro Glu Phe Val Asn Ala Ser Ala Asp Ala Gly Gly
945                 950                 955                 960
agc agc gcc acg tac atg gac cag gcc ccc tcc cca gct gtg tgc ccc      2928
Ser Ser Ala Thr Tyr Met Asp Gln Ala Pro Ser Pro Ala Val Cys Pro
                965                 970                 975
cag gct ccc tat aac atg tac cca cag aac cct gac cat gta ctc gat      2976
Gln Ala Pro Tyr Asn Met Tyr Pro Gln Asn Pro Asp His Val Leu Asp
                980                 985                 990
cag gat gga gaa ttc gac ctg gat  gag acc atg gat gtg  gcc agg cac   3024
Gln Asp Gly Glu Phe Asp Leu Asp  Glu Thr Met Asp Val  Ala Arg His
            995                 1000                1005
gtg gag gaa ctc tta cgc cga  cca atg gac agt ctt  gac tcc cgc       3069
Val Glu Glu Leu Leu Arg Arg  Pro Met Asp Ser Leu  Asp Ser Arg
        1010                1015                1020
ctc tcg ccc cct gcc ggt ctt  ttc acc tct gcc aga  ggc tcc ctc       3114
Leu Ser Pro Pro Ala Gly Leu  Phe Thr Ser Ala Arg  Gly Ser Leu
        1025                1030                1035
tca tga                                                              3120
Ser
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<210> 55

<211> 1039

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-Stat5 fusion

<400> 55
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Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20                  25                  30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35                  40                  45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50                  55                  60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100                 105                 110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
            115                 120                 125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                 135                 140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
            165                 170                 175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
            195                 200                 205
```

50

```
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                 215                 220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
Gly Leu Arg Ser Thr Met Ala Gly Trp Ile Gln Ala Gln Gln Leu Gln
            245                 250                 255
Gly Asp Ala Leu Arg Gln Met Gln Val Leu Tyr Gly Gln His Phe Pro
            260                 265                 270
Ile Glu Val Arg His Tyr Leu Ala Gln Trp Ile Glu Ser Gln Pro Trp
        275                 280                 285
Asp Ala Ile Asp Leu Asp Asn Pro Gln Asp Arg Ala Gln Ala Thr Gln
    290                 295                 300
Leu Leu Glu Gly Leu Val Gln Glu Leu Gln Lys Lys Ala Glu His Gln
305                 310                 315                 320
Val Gly Glu Asp Gly Phe Leu Leu Lys Ile Lys Leu Gly His Tyr Ala
            325                 330                 335
Thr Gln Leu Gln Lys Thr Tyr Asp Arg Cys Pro Leu Glu Leu Val Arg
            340                 345                 350
Cys Ile Arg His Ile Leu Tyr Asn Glu Gln Arg Leu Val Arg Glu Ala
            355                 360                 365
Asn Asn Cys Ser Ser Pro Ala Gly Ile Leu Val Asp Ala Met Ser Gln
    370                 375                 380
Lys His Leu Gln Ile Asn Gln Thr Phe Glu Glu Leu Arg Leu Val Thr
385                 390                 395                 400
Gln Asp Thr Glu Asn Glu Leu Lys Lys Leu Gln Gln Thr Gln Glu Tyr
            405                 410                 415
Phe Ile Ile Gln Tyr Gln Glu Ser Leu Arg Ile Gln Ala Gln Phe Ala
            420                 425                 430
Gln Leu Ala Gln Leu Ser Pro Gln Glu Arg Leu Ser Arg Glu Thr Ala
            435                 440                 445
Leu Gln Gln Lys Gln Val Ser Leu Glu Ala Trp Leu Gln Arg Glu Ala
    450                 455                 460
Gln Thr Leu Gln Gln Tyr Arg Val Glu Leu Ala Glu Lys His Gln Lys
465                 470                 475                 480
Thr Leu Gln Leu Leu Arg Lys Gln Gln Thr Ile Ile Leu Asp Asp Glu
            485                 490                 495
Leu Ile Gln Trp Lys Arg Arg Gln Gln Leu Ala Gly Asn Gly Gly Pro
            500                 505                 510
Pro Glu Gly Ser Leu Asp Val Leu Gln Ser Trp Cys Glu Lys Leu Ala
            515                 520                 525
Glu Ile Ile Trp Gln Asn Arg Gln Gln Ile Arg Arg Ala Glu His Leu
    530                 535                 540
Cys Gln Gln Leu Pro Ile Pro Gly Pro Val Glu Glu Met Leu Ala Glu
545                 550                 555                 560
Val Asn Ala Thr Ile Thr Asp Ile Ile Ser Ala Leu Val Thr Ser Thr
            565                 570                 575
Phe Ile Ile Glu Lys Gln Pro Pro Gln Val Leu Lys Thr Gln Thr Lys
            580                 585                 590
Phe Ala Ala Thr Val Arg Leu Leu Val Gly Gly Lys Leu Asn Val His
            595                 600                 605
Met Asn Pro Pro Gln Val Lys Ala Thr Ile Ile Ser Glu Gln Gln Ala
    610                 615                 620
Lys Ser Leu Leu Lys Asn Glu Asn Thr Arg Asn Glu Cys Ser Gly Glu
625                 630                 635                 640
Ile Leu Asn Asn Cys Cys Val Met Glu Tyr His Gln Ala Thr Gly Thr
            645                 650                 655
Leu Ser Ala His Phe Arg Asn Met Ser Leu Lys Arg Ile Lys Arg Ala
            660                 665                 670
Asp Arg Arg Gly Ala Glu Ser Val Thr Glu Glu Lys Phe Thr Val Leu
            675                 680                 685
Phe Glu Ser Gln Phe Ser Val Gly Ser Asn Glu Leu Val Phe Gln Val   .
            690                 695                 700
Lys Thr Leu Ser Leu Pro Val Val Val Ile Val His Gly Ser Gln Asp
```

51

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705                        710                        715                        720
His Asn Ala Thr Ala Thr Val Leu Trp Asp Asn Ala Phe Ala Glu Pro
            725                        730                        735
Gly Arg Val Pro Phe Ala Val Pro Asp Lys Val Leu Trp Pro Gln Leu
            740                        745                        750
Cys Glu Ala Leu Asn Met Lys Phe Lys Ala Glu Val Gln Ser Asn Arg
            755                        760                        765
Gly Leu Thr Lys Glu Asn Leu Val Phe Leu Ala Gln Lys Leu Phe Asn
            770                        775                        780
Asn Ser Ser Ser His Leu Glu Asp Tyr Ser Gly Leu Ser Val Ser Trp
785                        790                        795                        800
Ser Gln Phe Asn Arg Glu Asn Leu Pro Gly Trp Asn Tyr Thr Phe Trp
            805                        810                        815
Gln Trp Phe Asp Gly Val Met Glu Val Leu Lys Lys His His Lys Pro
            820                        825                        830
His Trp Asn Asp Gly Ala Ile Leu Gly Phe Val Asn Lys Gln Gln Ala
            835                        840                        845
His Asp Leu Leu Ile Asn Lys Pro Asp Gly Thr Phe Leu Leu Arg Phe
850                        855                        860
Ser Asp Ser Glu Ile Gly Gly Ile Thr Ile Ala Trp Lys Phe Asp Ser
865                        870                        875                        880
Pro Glu Arg Asn Leu Trp Asn Leu Lys Pro Phe Thr Thr Arg Asp Phe
            885                        890                        895
Ser Ile Arg Ser Leu Ala Asp Arg Leu Gly Asp Leu Ser Tyr Leu Ile
            900                        905                        910
Tyr Val Phe Pro Asp Arg Pro Lys Asp Glu Val Phe Ser Lys Tyr Tyr
            915                        920                        925
Thr Pro Val Leu Ala Lys Ala Val Asp Gly Tyr Val Lys Pro Gln Ile
            930                        935                        940
Lys Gln Val Val Pro Glu Phe Val Asn Ala Ser Ala Asp Ala Gly Gly
945                        950                        955                        960
Ser Ser Ala Thr Tyr Met Asp Gln Ala Pro Ser Pro Ala Val Cys Pro
            965                        970                        975
Gln Ala Pro Tyr Asn Met Tyr Pro Gln Asn Pro Asp His Val Leu Asp
            980                        985                        990
Gln Asp Gly Glu Phe Asp Leu Asp  Glu Thr Met Asp Val  Ala Arg His
            995                        1000                       1005
Val Glu  Glu Leu Leu Arg Arg  Pro Met Asp Ser Leu  Asp Ser Arg
     1010              1015                       1020
Leu Ser  Pro Pro Ala Gly Leu  Phe Thr Ser Ala Arg  Gly Ser Leu
     1025              1030                       1035
Ser
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<210> 56

<211> 1875

<212> DNA

<213> Artificial Sequence

<220>

<223> mERK1-F64L-S65T-GFP fusion

<220>

<221> CDS

<222> (1)..(1872)

<400> 56

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atg gcg gcg gcg gcg gcg gct ccg ggg ggc ggg ggc ggg gag ccc agg          48
Met Ala Ala Ala Ala Ala Ala Pro Gly Gly Gly Gly Gly Glu Pro Arg
1               5                   10                  15
gga act gct ggg gtc gtc ccg gtg gtc ccc ggg gag gtg gag gtg gtg          96
Gly Thr Ala Gly Val Val Pro Val Val Pro Gly Glu Val Glu Val Val
            20                  25                  30
aag ggg cag cca ttc gat gtg ggc cca cgc tac acg cag ctg cag tac         144
Lys Gly Gln Pro Phe Asp Val Gly Pro Arg Tyr Thr Gln Leu Gln Tyr
        35                  40                  45
atc ggc gag ggc gcg tac ggc atg gtc agc tca gct tat gac cac gtg         192
Ile Gly Glu Gly Ala Tyr Gly Met Val Ser Ser Ala Tyr Asp His Val
    50                  55                  60
cgc aag acc aga gtg gcc atc aag aag atc agc ccc ttt gag cat caa         240
Arg Lys Thr Arg Val Ala Ile Lys Lys Ile Ser Pro Phe Glu His Gln
65                  70                  75                  80
acc tac tgt cag cgc acg ctg agg gag atc cag atc ttg ctg cga ttc         288
Thr Tyr Cys Gln Arg Thr Leu Arg Glu Ile Gln Ile Leu Leu Arg Phe
                85                  90                  95
cgc cat gag aat gtt ata ggc atc cga gac atc ctc aga gcg ccc acc         336
Arg His Glu Asn Val Ile Gly Ile Arg Asp Ile Leu Arg Ala Pro Thr
            100                 105                 110
ctg gaa gcc atg aga gat gtt tac att gtt cag gac ctc atg gag aca         384
Leu Glu Ala Met Arg Asp Val Tyr Ile Val Gln Asp Leu Met Glu Thr
        115                 120                 125
gac ctg tac aag ctg ctt aaa agc cag cag ctg agc aat gac cac atc         432
Asp Leu Tyr Lys Leu Leu Lys Ser Gln Gln Leu Ser Asn Asp His Ile
        130                 135                 140
tgc tac ttc ctc tac cag atc ctc cgg ggc ctc aag tat ata cac tca         480
Cys Tyr Phe Leu Tyr Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser
145                 150                 155                 160
gcc aat gtg ctg cac cgg gac ctg aag cct tcc aat ctg ctt atc aac         528
Ala Asn Val Leu His Arg Asp Leu Lys Pro Ser Asn Leu Leu Ile Asn
                165                 170                 175
acc acc tgc gac ctt aag atc tgt gat ttt ggc ctg gcc cgg att gct         576
Thr Thr Cys Asp Leu Lys Ile Cys Asp Phe Gly Leu Ala Arg Ile Ala
            180                 185                 190
gac cct gag cac gac cac act ggc ttt ctg acg gag tat gtg gcc aca         624
Asp Pro Glu His Asp His Thr Gly Phe Leu Thr Glu Tyr Val Ala Thr
        195                 200                 205
cgc tgg tac cga gcc cca gag atc atg ctt aat tcc aag ggc tac acc         672
Arg Trp Tyr Arg Ala Pro Glu Ile Met Leu Asn Ser Lys Gly Tyr Thr
    210                 215                 220
aaa tcc atc gac atc tgg tct gtg ggc tgc att ctg gct gag atg ctc         720
Lys Ser Ile Asp Ile Trp Ser Val Gly Cys Ile Leu Ala Glu Met Leu
225                 230                 235                 240
tcc aac cgg ccc atc ttc ccc ggc aag cac tac ctg gac cag ctc aac         768
Ser Asn Arg Pro Ile Phe Pro Gly Lys His Tyr Leu Asp Gln Leu Asn
                245                 250                 255
cac att cta ggt atc ttg ggt tcc cca tcc cag gag gac ctt aat tgc         816
His Ile Leu Gly Ile Leu Gly Ser Pro Ser Gln Glu Asp Leu Asn Cys
            260                 265                 270
atc att aac atg aag gcc cga aac tac ctg cag tct ctg ccc tcg aaa         864
Ile Ile Asn Met Lys Ala Arg Asn Tyr Leu Gln Ser Leu Pro Ser Lys
        275                 280                 285
acc aag gtg gct tgg gcc aag ctc ttt cct aaa tct gac tcc aaa gct         912
Thr Lys Val Ala Trp Ala Lys Leu Phe Pro Lys Ser Asp Ser Lys Ala
        290                 295                 300
ctt gac ctg ctg gac cgg atg tta acc ttc aac cca aac aag cgc atc         960
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53

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Leu Asp Leu Leu Asp Arg Met Leu Thr Phe Asn Pro Asn Lys Arg Ile
305                 310                 315                 320
aca gta gag gaa gcg ctg gct cac cct tac ctg gaa cag tac tac gat      1008
Thr Val Glu Glu Ala Leu Ala His Pro Tyr Leu Glu Gln Tyr Tyr Asp
                325                 330                 335
ccg aca gat gag cca gtg gcc gag gag cca ttc acc ttc gac atg gag      1056
Pro Thr Asp Glu Pro Val Ala Glu Glu Pro Phe Thr Phe Asp Met Glu
                340                 345                 350
ctg gat gac ctc ccc aag gag cgg ctg aag gag ttg atc ttc cag gag      1104
Leu Asp Asp Leu Pro Lys Glu Arg Leu Lys Glu Leu Ile Phe Gln Glu
                355                 360                 365
aca gcc cgc ttc cag cca ggg gcg cca gag ggc ccc ggg cgc gcc atg      1152
Thr Ala Arg Phe Gln Pro Gly Ala Pro Glu Gly Pro Gly Arg Ala Met
        370                 375                 380
agt aaa gga gaa gaa ctt ttc act gga gtt gtc cca att ctt gtt gaa      1200
Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu
385                 390                 395                 400
tta gat ggc gat gtt aat ggg caa aaa ttc tct gtt agt gga gag ggt      1248
Leu Asp Gly Asp Val Asn Gly Gln Lys Phe Ser Val Ser Gly Glu Gly
                405                 410                 415
gaa ggt gat gca aca tac gga aaa ctt acc ctt aaa ttt att tgc act      1296
Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr
                420                 425                 430
act ggg aag cta cct gtt cca tgg cca acg ctt gtc act act ctc act      1344
Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr
        435                 440                 445
tat ggt gtt caa tgc ttt tct aga tac cca gat cat atg aaa cag cat      1392
Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His
        450                 455                 460
gac ttt ttc aag agt gcc atg ccc gaa ggt tat gta cag gaa aga act      1440
Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr
465                 470                 475                 480
ata ttt tac aaa gat gac ggg aac tac aag aca cgt gct gaa gtc aag      1488
Ile Phe Tyr Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys
                485                 490                 495
ttt gaa ggt gat acc ctt gtt aat aga atc gag tta aaa ggt att gat      1536
Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp
                500                 505                 510
ttt aaa gaa gat gga aac att ctt gga cac aaa atg gaa tac aat tat      1584
Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Met Glu Tyr Asn Tyr
        515                 520                 525
aac tca cat aat gta tac atc atg gca gac aaa cca aag aat ggc atc      1632
Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Pro Lys Asn Gly Ile
        530                 535                 540
aaa gtt aac ttc aaa att aga cac aac att aaa gat gga agc gtt caa      1680
Lys Val Asn Phe Lys Ile Arg His Asn Ile Lys Asp Gly Ser Val Gln
545                 550                 555                 560
tta gca gac cat tat caa caa aat act cca att ggc gat ggc cct gtc      1728
Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val
                565                 570                 575
ctt tta cca gac aac cat tac ctg tcc acg caa tct gcc ctt tcc aaa      1776
Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys
                580                 585                 590
gat ccc aac gaa aag aga gat cac atg atc ctt ctt gag ttt gta aca      1824
Asp Pro Asn Glu Lys Arg Asp His Met Ile Leu Leu Glu Phe Val Thr
        595                 600                 605
gct gct ggg att aca cat ggc atg gat gaa cta tac aaa cct cag gag      1872
Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr Lys Pro Gln Glu
        610                 615                 620
taa                                                                  1875
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<210> 57

<211> 624

<212> PRT

<213> Artificial Sequence

<220>

<223> mERK1-F64L-S65T-GFP fusion

<400> 57

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Met Ala Ala Ala Ala Ala Ala Pro Gly Gly Gly Gly Gly Glu Pro Arg
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Gly Thr Ala Gly Val Val Pro Val Val Pro Gly Glu Val Glu Val Val
            20                  25                  30
Lys Gly Gln Pro Phe Asp Val Gly Pro Arg Tyr Thr Gln Leu Gln Tyr
        35                  40                  45
Ile Gly Glu Gly Ala Tyr Gly Met Val Ser Ser Ala Tyr Asp His Val
    50                  55                  60
Arg Lys Thr Arg Val Ala Ile Lys Lys Ile Ser Pro Phe Glu His Gln
65                  70                  75                  80
Thr Tyr Cys Gln Arg Thr Leu Arg Glu Ile Gln Ile Leu Leu Arg Phe
            85                  90                  95
Arg His Glu Asn Val Ile Gly Ile Arg Asp Ile Leu Arg Ala Pro Thr
            100                 105                 110
Leu Glu Ala Met Arg Asp Val Tyr Ile Val Gln Asp Leu Met Glu Thr
        115                 120                 125
Asp Leu Tyr Lys Leu Leu Lys Ser Gln Gln Leu Ser Asn Asp His Ile
    130                 135                 140
Cys Tyr Phe Leu Tyr Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser
145                 150                 155                 160
Ala Asn Val Leu His Arg Asp Leu Lys Pro Ser Asn Leu Leu Ile Asn
            165                 170                 175
Thr Thr Cys Asp Leu Lys Ile Cys Asp Phe Gly Leu Ala Arg Ile Ala
            180                 185                 190
Asp Pro Glu His Asp His Thr Gly Phe Leu Thr Glu Tyr Val Ala Thr
        195                 200                 205
Arg Trp Tyr Arg Ala Pro Glu Ile Met Leu Asn Ser Lys Gly Tyr Thr
    210                 215                 220
Lys Ser Ile Asp Ile Trp Ser Val Gly Cys Ile Leu Ala Glu Met Leu
225                 230                 235                 240
Ser Asn Arg Pro Ile Phe Pro Gly Lys His Tyr Leu Asp Gln Leu Asn
            245                 250                 255
His Ile Leu Gly Ile Leu Gly Ser Pro Ser Gln Glu Asp Leu Asn Cys
            260                 265                 270
Ile Ile Asn Met Lys Ala Arg Asn Tyr Leu Gln Ser Leu Pro Ser Lys
            275                 280                 285
Thr Lys Val Ala Trp Ala Lys Leu Phe Pro Lys Ser Asp Ser Lys Ala
    290                 295                 300
Leu Asp Leu Leu Asp Arg Met Leu Thr Phe Asn Pro Asn Lys Arg Ile
305                 310                 315                 320
Thr Val Glu Glu Ala Leu Ala His Pro Tyr Leu Glu Gln Tyr Tyr Asp
            325                 330                 335
Pro Thr Asp Glu Pro Val Ala Glu Glu Pro Phe Thr Phe Asp Met Glu
            340                 345                 350
Leu Asp Asp Leu Pro Lys Glu Arg Leu Lys Glu Leu Ile Phe Gln Glu
    355                 360                 365
```

55

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Thr Ala Arg Phe Gln Pro Gly Ala Pro Glu Gly Pro Gly Arg Ala Met
    370                 375                 380
Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu
385                 390                 395                 400
Leu Asp Gly Asp Val Asn Gly Gln Lys Phe Ser Val Ser Gly Glu Gly
                405                 410                 415
Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr
            420                 425                 430
Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr
        435                 440                 445
Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His
    450                 455                 460
Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr
465                 470                 475                 480
Ile Phe Tyr Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys
                485                 490                 495
Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp
            500                 505                 510
Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Met Glu Tyr Asn Tyr
        515                 520                 525
Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Pro Lys Asn Gly Ile
    530                 535                 540
Lys Val Asn Phe Lys Ile Arg His Asn Ile Lys Asp Gly Ser Val Gln
545                 550                 555                 560
Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val
                565                 570                 575
Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys
            580                 585                 590
Asp Pro Asn Glu Lys Arg Asp His Met Ile Leu Leu Glu Phe Val Thr
        595                 600                 605
Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr Lys Pro Gln Glu
    610                 615                 620


<210>  58

<211>  1815

<212>  DNA

<213>  Artificial Sequence


<220>

<223>  Erk2-EGFP fusion

<220>

<221>  CDS

<222>  (1)..(1812)


<400>  58
atg gcg gcg gcg gcg gcg gcg ggc ccg gag atg gtc cgc ggg cag gtg      48
Met Ala Ala Ala Ala Ala Ala Gly Pro Glu Met Val Arg Gly Gln Val
1               5                   10                  15
ttc gac gtg ggg ccg cgc tac act aat ctc tcg tac atc gga gaa ggc      96
Phe Asp Val Gly Pro Arg Tyr Thr Asn Leu Ser Tyr Ile Gly Glu Gly
                20                  25                  30
```

56

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gcc tac ggc atg gtt tgt tct gct tat gat aat ctc aac aaa gtt cga    144
Ala Tyr Gly Met Val Cys Ser Ala Tyr Asp Asn Leu Asn Lys Val Arg
        35                  40                  45
gtt gct atc aag aaa atc agt cct ttt gag cac cag acc tac tgt cag    192
Val Ala Ile Lys Lys Ile Ser Pro Phe Glu His Gln Thr Tyr Cys Gln
    50                  55                  60
aga acc ctg aga gag ata aaa atc cta ctg cgc ttc aga cat gag aac    240
Arg Thr Leu Arg Glu Ile Lys Ile Leu Leu Arg Phe Arg His Glu Asn
65                  70                  75                  80
atc atc ggc atc aat gac atc atc cgg gca cca acc att gag cag atg    288
Ile Ile Gly Ile Asn Asp Ile Ile Arg Ala Pro Thr Ile Glu Gln Met
                85                  90                  95
aaa gat gta tat ata gta cag gac ctc atg gag aca gat ctt tac aag    336
Lys Asp Val Tyr Ile Val Gln Asp Leu Met Glu Thr Asp Leu Tyr Lys
                100                 105                 110
ctc ttg aag aca cag cac ctc agc aat gat cat atc tgc tat ttt ctt    384
Leu Leu Lys Thr Gln His Leu Ser Asn Asp His Ile Cys Tyr Phe Leu
            115                 120                 125
tat cag atc ctg aga gga tta aag tat ata cat tca gct aat gtt ctg    432
Tyr Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser Ala Asn Val Leu
        130                 135                 140
cac cgt gac ctc aag cct tcc aac ctc ctg ctg aac acc act tgt gat    480
His Arg Asp Leu Lys Pro Ser Asn Leu Leu Leu Asn Thr Thr Cys Asp
145                 150                 155                 160
ctc aag atc tgt gac ttt ggc ctt gcc cgt gtt gca gat cca gac cat    528
Leu Lys Ile Cys Asp Phe Gly Leu Ala Arg Val Ala Asp Pro Asp His
                165                 170                 175
gat cat aca ggg ttc ttg aca gag tat gta gcc acg cgt tgg tac aga    576
Asp His Thr Gly Phe Leu Thr Glu Tyr Val Ala Thr Arg Trp Tyr Arg
                180                 185                 190
gct cca gaa att atg ttg aat tcc aag ggt tat acc aag tcc att gat    624
Ala Pro Glu Ile Met Leu Asn Ser Lys Gly Tyr Thr Lys Ser Ile Asp
            195                 200                 205
att tgg tct gtg ggc tgc atc ctg gca gag atg cta tcc aac agg cct    672
Ile Trp Ser Val Gly Cys Ile Leu Ala Glu Met Leu Ser Asn Arg Pro
        210                 215                 220
atc ttc cca gga aag cat tac ctt gac cag ctg aat cac atc ctg ggt    720
Ile Phe Pro Gly Lys His Tyr Leu Asp Gln Leu Asn His Ile Leu Gly
225                 230                 235                 240
att ctt gga tct cca tca cag gaa gat ctg aat tgt ata ata aat tta    768
Ile Leu Gly Ser Pro Ser Gln Glu Asp Leu Asn Cys Ile Ile Asn Leu
                245                 250                 255
aaa gct aga aac tat ttg ctt tct ctc ccg cac aaa aat aag gtg ccg    816
Lys Ala Arg Asn Tyr Leu Leu Ser Leu Pro His Lys Asn Lys Val Pro
                260                 265                 270
tgg aac agg ttg ttc cca aac gct gac tcc aaa gct ctg gat tta ctg    864
Trp Asn Arg Leu Phe Pro Asn Ala Asp Ser Lys Ala Leu Asp Leu Leu
            275                 280                 285
gat aaa atg ttg aca ttt aac cct cac aag agg att gaa gtt gaa cag    912
Asp Lys Met Leu Thr Phe Asn Pro His Lys Arg Ile Glu Val Glu Gln
        290                 295                 300
gct ctg gcc cac ccg tac ctg gag cag tat tat gac cca agt gat gag    960
Ala Leu Ala His Pro Tyr Leu Glu Gln Tyr Tyr Asp Pro Ser Asp Glu
305                 310                 315                 320
ccc att gct gaa gca cca ttc aag ttt gac atg gag ctg gac gac tta   1008
Pro Ile Ala Glu Ala Pro Phe Lys Phe Asp Met Glu Leu Asp Asp Leu
                325                 330                 335
cct aag gag aag ctc aaa gaa ctc att ttt gaa gag act gct cga ttc   1056
Pro Lys Glu Lys Leu Lys Glu Leu Ile Phe Glu Glu Thr Ala Arg Phe
                340                 345                 350
cag cca gga tac aga tct atg gat cca ccg gtc gcc acc atg gtg agc   1104
Gln Pro Gly Tyr Arg Ser Met Asp Pro Pro Val Ala Thr Met Val Ser
        355                 360                 365
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57

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aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc gag ctg      1152
Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu
        370                 375                 380
gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag ggc gag      1200
Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu
385                 390                 395                 400
ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc acc acc      1248
Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr
                405                 410                 415
ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg acc tac      1296
Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr
            420                 425                 430
ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag cac gac      1344
Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His Asp
            435                 440                 445
ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc acc atc      1392
Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile
        450                 455                 460
ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag gtg aag ttc      1440
Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe
465                 470                 475                 480
gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc atc gac ttc      1488
Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe
                485                 490                 495
aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac aac tac aac      1536
Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn
            500                 505                 510
agc cac aac gtc tat atc atg gcc gac aag cag aag aac ggc atc aag      1584
Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys
            515                 520                 525
gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc gtg cag ctc      1632
Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu
        530                 535                 540
gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc ccc gtg ctg      1680
Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu
545                 550                 555                 560
ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg agc aaa gac      1728
Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp
                565                 570                 575
ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc gtg acc gcc      1776
Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr Ala
            580                 585                 590
gcc ggg atc act ctc ggc atg gac gag ctg tac aag taa                  1815
Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
            595                 600


<210>  59

<211>  604

<212>  PRT

<213>  Artificial Sequence


<220>

<223>  Erk2-EGFP fusion


<400>  59
Met Ala Ala Ala Ala Ala Ala Gly Pro Glu Met Val Arg Gly Gln Val
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58

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1              5                      10                     15
Phe Asp Val Gly Pro Arg Tyr Thr Asn Leu Ser Tyr Ile Gly Glu Gly
            20            25              30
Ala Tyr Gly Met Val Cys Ser Ala Tyr Asp Asn Leu Asn Lys Val Arg
        35            40            45
Val Ala Ile Lys Lys Ile Ser Pro Phe Glu His Gln Thr Tyr Cys Gln
    50            55            60
Arg Thr Leu Arg Glu Ile Lys Ile Leu Leu Arg Phe Arg His Glu Asn
65            70            75            80
Ile Ile Gly Ile Asn Asp Ile Ile Arg Ala Pro Thr Ile Glu Gln Met
            85            90            95
Lys Asp Val Tyr Ile Val Gln Asp Leu Met Glu Thr Asp Leu Tyr Lys
        100           105           110
Leu Leu Lys Thr Gln His Leu Ser Asn Asp His Ile Cys Tyr Phe Leu
        115           120           125
Tyr Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser Ala Asn Val Leu
    130           135           140
His Arg Asp Leu Lys Pro Ser Asn Leu Leu Leu Asn Thr Thr Cys Asp
145           150           155           160
Leu Lys Ile Cys Asp Phe Gly Leu Ala Arg Val Ala Asp Pro Asp His
            165           170           175
Asp His Thr Gly Phe Leu Thr Glu Tyr Val Ala Thr Arg Trp Tyr Arg
            180           185           190
Ala Pro Glu Ile Met Leu Asn Ser Lys Gly Tyr Thr Lys Ser Ile Asp
        195           200           205
Ile Trp Ser Val Gly Cys Ile Leu Ala Glu Met Leu Ser Asn Arg Pro
    210           215           220
Ile Phe Pro Gly Lys His Tyr Leu Asp Gln Leu Asn His Ile Leu Gly
225           230           235           240
Ile Leu Gly Ser Pro Ser Gln Glu Asp Leu Asn Cys Ile Ile Asn Leu
            245           250           255
Lys Ala Arg Asn Tyr Leu Leu Ser Leu Pro His Lys Asn Lys Val Pro
            260           265           270
Trp Asn Arg Leu Phe Pro Asn Ala Asp Ser Lys Ala Leu Asp Leu Leu
        275           280           285
Asp Lys Met Leu Thr Phe Asn Pro His Lys Arg Ile Glu Val Glu Gln
    290           295           300
Ala Leu Ala His Pro Tyr Leu Glu Gln Tyr Tyr Asp Pro Ser Asp Glu
305           310           315           320
Pro Ile Ala Glu Ala Pro Phe Lys Phe Asp Met Glu Leu Asp Asp Leu
            325           330           335
Pro Lys Glu Lys Leu Lys Glu Leu Ile Phe Glu Glu Thr Ala Arg Phe
        340           345           350
Gln Pro Gly Tyr Arg Ser Met Asp Pro Pro Val Ala Thr Met Val Ser
        355           360           365
Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu
    370           375           380
Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu
385           390           395           400
Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr
            405           410           415
Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr
            420           425           430
Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His Asp
        435           440           445
Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile
    450           455           460
Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe
465           470           475           480
Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe
            485           490           495
Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn
            500           505           510
```

```
Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys
    515                 520                 525
Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu
    530                 535                 540
Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu
545                 550                 555                 560
Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp
                565                 570                 575
Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr Ala
        580                 585                 590
Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
        595                 600
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<210> 60

<211> 2511

<212> DNA

<213> Artificial Sequence

<220>

<223> Grk5-EGFP fusion

<220>

<221> CDS

<222> (1)..(2508)

<400> 60
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atg gag ctg gaa aac atc gtg gcc aac acg gtc ttg ctg aaa gcc agg      48
Met Glu Leu Glu Asn Ile Val Ala Asn Thr Val Leu Leu Lys Ala Arg
1               5                   10                  15
gaa ggg ggc gga gga aag cgc aaa ggg aaa agc aag aag tgg aaa gaa      96
Glu Gly Gly Gly Gly Lys Arg Lys Gly Lys Ser Lys Lys Trp Lys Glu
            20                  25                  30
atc ctg aag ttc cct cac att agc cag tgt gaa gac ctc cga agg acc     144
Ile Leu Lys Phe Pro His Ile Ser Gln Cys Glu Asp Leu Arg Arg Thr
        35                  40                  45
ata gac aga gat tac tgc agt tta tgt gac aag cag cca atc ggg agg     192
Ile Asp Arg Asp Tyr Cys Ser Leu Cys Asp Lys Gln Pro Ile Gly Arg
    50                  55                  60
ctg ctt ttc cgg cag ttt tgt gaa acc agg cct ggg ctg gag tgt tac     240
Leu Leu Phe Arg Gln Phe Cys Glu Thr Arg Pro Gly Leu Glu Cys Tyr
65                  70                  75                  80
att cag ttc ctg gac tcc gtg gca gaa tat gaa gtt act cca gat gaa     288
Ile Gln Phe Leu Asp Ser Val Ala Glu Tyr Glu Val Thr Pro Asp Glu
                85                  90                  95
aaa ctg gga gag aaa ggg aag gaa att atg acc aag tac ctc acc cca     336
Lys Leu Gly Glu Lys Gly Lys Glu Ile Met Thr Lys Tyr Leu Thr Pro
            100                 105                 110
aag tcc cct gtt ttc ata gcc caa gtt ggc caa gac ctg gtc tcc cag     384
Lys Ser Pro Val Phe Ile Ala Gln Val Gly Gln Asp Leu Val Ser Gln
        115                 120                 125
acg gag gag aag ctc cta cag aag ccg tgc aaa gaa ctc ttt tct gcc     432
Thr Glu Glu Lys Leu Leu Gln Lys Pro Cys Lys Glu Leu Phe Ser Ala
```

60

```
                130                         135                         140
tgt gca cag tct gtc cac gag tac ctg agg gga gaa cca ttc cac gaa      480
Cys Ala Gln Ser Val His Glu Tyr Leu Arg Gly Glu Pro Phe His Glu
145                         150                         155                         160
tat ctg gac agc atg ttt ttt gac cgc ttt ctc cag tgg aag tgg ttg      528
Tyr Leu Asp Ser Met Phe Phe Asp Arg Phe Leu Gln Trp Lys Trp Leu
                165                         170                         175
gaa agg caa ccg gtg acc aaa aac act ttc agg cag tat cga gtg cta      576
Glu Arg Gln Pro Val Thr Lys Asn Thr Phe Arg Gln Tyr Arg Val Leu
                180                         185                         190
gga aaa ggg ggc ttc ggg gag gtc tgt gcc tgc cag gtt cgg gcc acg      624
Gly Lys Gly Gly Phe Gly Glu Val Cys Ala Cys Gln Val Arg Ala Thr
                195                         200                         205
ggt aaa atg tat gcc tgc aag cgc ttg gag aag aag agg atc aaa aag      672
Gly Lys Met Tyr Ala Cys Lys Arg Leu Glu Lys Lys Arg Ile Lys Lys
                210                         215                         220
agg aaa ggg gag tcc atg gcc ctc aat gag aag cag atc ctc gag aag      720
Arg Lys Gly Glu Ser Met Ala Leu Asn Glu Lys Gln Ile Leu Glu Lys
225                         230                         235                         240
gtc aac agt cag ttt gtg gtc aac ctg gcc tat gcc tac gag acc aag      768
Val Asn Ser Gln Phe Val Val Asn Leu Ala Tyr Ala Tyr Glu Thr Lys
                245                         250                         255
gat gca ctg tgc ttg gtc ctg acc atc atg aat ggg ggt gac ctg aag      816
Asp Ala Leu Cys Leu Val Leu Thr Ile Met Asn Gly Gly Asp Leu Lys
                260                         265                         270
ttc cac atc tac aac atg ggc aac cct ggc ttc gag gag gag cgg gcc      864
Phe His Ile Tyr Asn Met Gly Asn Pro Gly Phe Glu Glu Glu Arg Ala
                275                         280                         285
ttg ttt tat gcg gca gag atc ctc tgc ggc tta gaa gac ctc cac cgt      912
Leu Phe Tyr Ala Ala Glu Ile Leu Cys Gly Leu Glu Asp Leu His Arg
                290                         295                         300
gag aac acc gtc tac cga gat ctg aaa cct gaa aac atc ctg tta gat      960
Glu Asn Thr Val Tyr Arg Asp Leu Lys Pro Glu Asn Ile Leu Leu Asp
305                         310                         315                         320
gat tat ggc cac att agg atc tca gac ctg ggc ttg gct gtg aag atc     1008
Asp Tyr Gly His Ile Arg Ile Ser Asp Leu Gly Leu Ala Val Lys Ile
                325                         330                         335
ccc gag gga gac ctg atc cgc ggc cgg gtg ggc act gtt ggc tac atg     1056
Pro Glu Gly Asp Leu Ile Arg Gly Arg Val Gly Thr Val Gly Tyr Met
                340                         345                         350
gcc ccc gaa gtc ctg aac aac cag agg tac ggc ctg agc ccc gac tac     1104
Ala Pro Glu Val Leu Asn Asn Gln Arg Tyr Gly Leu Ser Pro Asp Tyr
                355                         360                         365
tgg ggc ctt ggc tgc ctc atc tat gag atg atc gag ggc cag tcg ccg     1152
Trp Gly Leu Gly Cys Leu Ile Tyr Glu Met Ile Glu Gly Gln Ser Pro
                370                         375                         380
ttc cgc ggc cgt aag gag aag gtg aag cgg gag gag gtg gac cgc cgg     1200
Phe Arg Gly Arg Lys Glu Lys Val Lys Arg Glu Glu Val Asp Arg Arg
385                         390                         395                         400
gtc ctg gag acg gag gag gtg tac tcc cac aag ttc tcc gag gag gcc     1248
Val Leu Glu Thr Glu Glu Val Tyr Ser His Lys Phe Ser Glu Glu Ala
                            405                         410                         415
aag tcc atc tgc aag atg ctg ctc acg aaa gat gcg aag cag agg ctg     1296
Lys Ser Ile Cys Lys Met Leu Leu Thr Lys Asp Ala Lys Gln Arg Leu
                420                         425                         430
ggc tgc cag gag gag ggg gct gca gag gtc aag aga cac ccc ttc ttc     1344
Gly Cys Gln Glu Glu Gly Ala Ala Glu Val Lys Arg His Pro Phe Phe
                435                         440                         445
agg aac atg aac ttc aag cgc tta gaa gcc ggg atg ttg gac cct ccc     1392
Arg Asn Met Asn Phe Lys Arg Leu Glu Ala Gly Met Leu Asp Pro Pro
                450                         455                         460
ttc gtt cca gac ccc cgc gct gtg tac tgt aag gac gtg ctg gac atc     1440
Phe Val Pro Asp Pro Arg Ala Val Tyr Cys Lys Asp Val Leu Asp Ile
```

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gag cag ttc tcc act gtg aag ggc gtc aat ctg gac cac aca gac gac    1488
Glu Gln Phe Ser Thr Val Lys Gly Val Asn Leu Asp His Thr Asp Asp
            485                          490                  495
gac ttc tac tcc aag ttc tcc acg ggc tct gtg tcc atc cca tgg caa    1536
Asp Phe Tyr Ser Lys Phe Ser Thr Gly Ser Val Ser Ile Pro Trp Gln
            500                      505                  510
aac gag atg ata gaa aca gaa tgc ttt aag gag ctg aac gtg ttt gga    1584
Asn Glu Met Ile Glu Thr Glu Cys Phe Lys Glu Leu Asn Val Phe Gly
        515                      520                  525
cct aat ggt acc ctc ccg cca gat ctg aac aga aac cac cct ccg gaa    1632
Pro Asn Gly Thr Leu Pro Pro Asp Leu Asn Arg Asn His Pro Pro Glu
        530                      535                  540
ccg ccc aag aaa ggg ctg ctc cag aga ctc ttc aag cgg cag cat cag    1680
Pro Pro Lys Lys Gly Leu Leu Gln Arg Leu Phe Lys Arg Gln His Gln
545                      550                      555                  560
aac aat tcc aag agt tcg ccc agc tcc aag acc agt ttt aac cac cac    1728
Asn Asn Ser Lys Ser Ser Pro Ser Ser Lys Thr Ser Phe Asn His His
                565                      570                  575
ata aac tca aac cat gtc agc tcg aac tcc acc gga agc agc agg gat    1776
Ile Asn Ser Asn His Val Ser Ser Asn Ser Thr Gly Ser Ser Arg Asp
            580                      585                  590
cca ccg gtc gcc acc atg gtg agc aag ggc gag gag ctg ttc acc ggg    1824
Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly
            595                      600                  605
gtg gtg ccc atc ctg gtc gag ctg gac ggc gac gta aac ggc cac aag    1872
Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys
            610                      615                  620
ttc agc gtg tcc ggc gag ggc gag ggc gat gcc acc tac ggc aag ctg    1920
Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu
625                      630                      635                  640
acc ctg aag ttc atc tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc    1968
Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro
                645                      650                  655
acc ctc gtg acc acc ctg acc tac ggc gtg cag tgc ttc agc cgc tac    2016
Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr
            660                      665                  670
ccc gac cac atg aag cag cac gac ttc ttc aag tcc gcc atg ccc gaa    2064
Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu
            675                      680                  685
ggc tac gtc cag gag cgc acc atc ttc ttc aag gac gac ggc aac tac    2112
Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr
            690                      695                  700
aag acc cgc gcc gag gtg aag ttc gag ggc gac acc ctg gtg aac cgc    2160
Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg
705                      710                      715                  720
atc gag ctg aag ggc atc gac ttc aag gag gac ggc aac atc ctg ggg    2208
Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly
                725                      730                  735
cac aag ctg gag tac aac tac aac agc cac aac gtc tat atc atg gcc    2256
His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala
            740                      745                  750
gac aag cag aag aac ggc atc aag gtg aac ttc aag atc cgc cac aac    2304
Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn
            755                      760                  765
atc gag gac ggc agc gtg cag ctc gcc gac cac tac cag cag aac acc    2352
Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr
            770                      775                  780
ccc atc ggc gac ggc ccc gtg ctg ctg ccc gac aac cac tac ctg agc    2400
Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser
785                      790                      795                  800
acc cag tcc gcc ctg agc aaa gac ccc aac gag aag cgc gat cac atg    2448
Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met
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gtc ctg ctg gag ttc gtg acc gcc gcc ggg atc act ctc ggc atg gac   2496
Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp
        820   825   830
gag ctg tac aag taa   2511
Glu Leu Tyr Lys
        835

<210>   61

<211>   836

<212>   PRT

<213>   Artificial Sequence

<220>

<223>   Grk5-EGFP fusion

<400>   61
Met Glu Leu Glu Asn Ile Val Ala Asn Thr Val Leu Leu Lys Ala Arg
1   5   10   15
Glu Gly Gly Gly Gly Lys Arg Lys Gly Lys Ser Lys Lys Trp Lys Glu
            20   25   30
Ile Leu Lys Phe Pro His Ile Ser Gln Cys Glu Asp Leu Arg Arg Thr
        35   40   45
Ile Asp Arg Asp Tyr Cys Ser Leu Cys Asp Lys Gln Pro Ile Gly Arg
    50   55   60
Leu Leu Phe Arg Gln Phe Cys Glu Thr Arg Pro Gly Leu Glu Cys Tyr
65   70   75   80
Ile Gln Phe Leu Asp Ser Val Ala Glu Tyr Glu Val Thr Pro Asp Glu
                85   90   95
Lys Leu Gly Glu Lys Gly Lys Glu Ile Met Thr Lys Tyr Leu Thr Pro
            100   105   110
Lys Ser Pro Val Phe Ile Ala Gln Val Gly Gln Asp Leu Val Ser Gln
        115   120   125
Thr Glu Glu Lys Leu Leu Gln Lys Pro Cys Lys Glu Leu Phe Ser Ala
    130   135   140
Cys Ala Gln Ser Val His Glu Tyr Leu Arg Gly Glu Pro Phe His Glu
145   150   155   160
Tyr Leu Asp Ser Met Phe Phe Asp Arg Phe Leu Gln Trp Lys Trp Leu
                165   170   175
Glu Arg Gln Pro Val Thr Lys Asn Thr Phe Arg Gln Tyr Arg Val Leu
            180   185   190
Gly Lys Gly Gly Phe Gly Glu Val Cys Ala Cys Gln Val Arg Ala Thr
        195   200   205
Gly Lys Met Tyr Ala Cys Lys Arg Leu Glu Lys Lys Arg Ile Lys Lys
    210   215   220
Arg Lys Gly Glu Ser Met Ala Leu Asn Glu Lys Gln Ile Leu Glu Lys
225   230   235   240
Val Asn Ser Gln Phe Val Val Asn Leu Ala Tyr Ala Tyr Glu Thr Lys
                245   250   255
Asp Ala Leu Cys Leu Val Leu Thr Ile Met Asn Gly Gly Asp Leu Lys
                260   265   270
Phe His Ile Tyr Asn Met Gly Asn Pro Gly Phe Glu Glu Glu Arg Ala
        275   280   285
Leu Phe Tyr Ala Ala Glu Ile Leu Cys Gly Leu Glu Asp Leu His Arg
    290   295   300
Glu Asn Thr Val Tyr Arg Asp Leu Lys Pro Glu Asn Ile Leu Leu Asp

63

```
305                    310                    315                    320
Asp Tyr Gly His Ile Arg Ile Ser Asp Leu Gly Leu Ala Val Lys Ile
                325                    330                    335
Pro Glu Gly Asp Leu Ile Arg Gly Arg Val Gly Thr Val Gly Tyr Met
                340                    345                    350
Ala Pro Glu Val Leu Asn Asn Gln Arg Tyr Gly Leu Ser Pro Asp Tyr
        355                    360                    365
Trp Gly Leu Gly Cys Leu Ile Tyr Glu Met Ile Glu Gly Gln Ser Pro
        370                    375                    380
Phe Arg Gly Arg Lys Glu Lys Val Lys Arg Glu Glu Val Asp Arg Arg
385                    390                    395                    400
Val Leu Glu Thr Glu Glu Val Tyr Ser His Lys Phe Ser Glu Glu Ala
                405                    410                    415
Lys Ser Ile Cys Lys Met Leu Leu Thr Lys Asp Ala Lys Gln Arg Leu
                420                    425                    430
Gly Cys Gln Glu Glu Gly Ala Ala Glu Val Lys Arg His Pro Phe Phe
        435                    440                    445
Arg Asn Met Asn Phe Lys Arg Leu Glu Ala Gly Met Leu Asp Pro Pro
        450                    455                    460
Phe Val Pro Asp Pro Arg Ala Val Tyr Cys Lys Asp Val Leu Asp Ile
465                    470                    475                    480
Glu Gln Phe Ser Thr Val Lys Gly Val Asn Leu Asp His Thr Asp Asp
                485                    490                    495
Asp Phe Tyr Ser Lys Phe Ser Thr Gly Ser Val Ser Ile Pro Trp Gln
                500                    505                    510
Asn Glu Met Ile Glu Thr Glu Cys Phe Lys Glu Leu Asn Val Phe Gly
        515                    520                    525
Pro Asn Gly Thr Leu Pro Pro Asp Leu Asn Arg Asn His Pro Pro Glu
        530                    535                    540
Pro Pro Lys Lys Gly Leu Leu Gln Arg Leu Phe Lys Arg Gln His Gln
545                    550                    555                    560
Asn Asn Ser Lys Ser Ser Pro Ser Ser Lys Thr Ser Phe Asn His His
                565                    570                    575
Ile Asn Ser Asn His Val Ser Ser Asn Ser Thr Gly Ser Ser Arg Asp
                580                    585                    590
Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly
        595                    600                    605
Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys
        610                    615                    620
Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu
625                    630                    635                    640
Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro
                645                    650                    655
Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr
                660                    665                    670
Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu
        675                    680                    685
Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr
        690                    695                    700
Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg
705                    710                    715                    720
Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly
                725                    730                    735
His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala
                740                    745                    750
Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn
        755                    760                    765
Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr
        770                    775                    780
Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser
785                    790                    795                    800
Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met
                805                    810                    815
```

64

```
Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp
            820                 825                 830
Glu Leu Tyr Lys
            835
```

<210> 62

<211> 1893

<212> DNA

<213> Artificial Sequence

<220>

<223> Jnk1-EGFP Fusion

<220>

<221> CDS

<222> (1)..(1890)

<400> 62
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atg agc aga agc aag cgt gac aac aat ttt tat agt gta gag att gga      48
Met Ser Arg Ser Lys Arg Asp Asn Asn Phe Tyr Ser Val Glu Ile Gly
1               5                   10                  15
gat tct aca ttc aca gtc ctg aaa cga tat cag aat tta aaa cct ata      96
Asp Ser Thr Phe Thr Val Leu Lys Arg Tyr Gln Asn Leu Lys Pro Ile
                20                  25                  30
ggc tca gga gct caa gga ata gta tgc gca gct tat gat gcc att ctt     144
Gly Ser Gly Ala Gln Gly Ile Val Cys Ala Ala Tyr Asp Ala Ile Leu
            35                  40                  45
gaa aga aat gtt gca atc aag aag cta agc cga cca ttt cag aat cag     192
Glu Arg Asn Val Ala Ile Lys Lys Leu Ser Arg Pro Phe Gln Asn Gln
        50                  55                  60
act cat gcc aag cgg gcc tac aga gag cta gtt ctt atg aaa tgt gtt     240
Thr His Ala Lys Arg Ala Tyr Arg Glu Leu Val Leu Met Lys Cys Val
65                  70                  75                  80
aat cac aaa aat ata att ggc ctt ttg aat gtt ttc aca cca cag aaa     288
Asn His Lys Asn Ile Ile Gly Leu Leu Asn Val Phe Thr Pro Gln Lys
                85                  90                  95
tcc cta gaa gaa ttt caa gat gtt tac ata gtc atg gag ctc atg gat     336
Ser Leu Glu Glu Phe Gln Asp Val Tyr Ile Val Met Glu Leu Met Asp
                100                 105                 110
gca aat ctt tgc caa gtg att cag atg gag cta gat cat gaa aga atg     384
Ala Asn Leu Cys Gln Val Ile Gln Met Glu Leu Asp His Glu Arg Met
            115                 120                 125
tcc tac ctt ctc tat cag atg ctg tgt gga atc aag cac ctt cat tct     432
Ser Tyr Leu Leu Tyr Gln Met Leu Cys Gly Ile Lys His Leu His Ser
        130                 135                 140
gct gga att att cat cgg gac tta aag ccc agt aat ata gta gta aaa     480
Ala Gly Ile Ile His Arg Asp Leu Lys Pro Ser Asn Ile Val Val Lys
145                 150                 155                 160
tct gat tgc act ttg aag att ctt gac ttc ggt ctg gcc agg act gca     528
Ser Asp Cys Thr Leu Lys Ile Leu Asp Phe Gly Leu Ala Arg Thr Ala
                165                 170                 175
gga acg agt ttt atg atg acg cct tat gta gtg act cgc tac tac aga     576
```

65

```
Gly Thr Ser Phe Met Met Thr Pro Tyr Val Val Thr Arg Tyr Tyr Arg
        180                 185                 190
gca ccc gag gtc atc ctt ggc atg ggc tac aag gaa aac gtg gat tta    624
Ala Pro Glu Val Ile Leu Gly Met Gly Tyr Lys Glu Asn Val Asp Leu
        195                 200                 205
tgg tct gtg ggg tgc att atg gga gaa atg gtt tgc cac aaa atc ctc    672
Trp Ser Val Gly Cys Ile Met Gly Glu Met Val Cys His Lys Ile Leu
    210                 215                 220
ttt cca gga agg gac tat att gat cag tgg aat aaa gtt att gaa cag    720
Phe Pro Gly Arg Asp Tyr Ile Asp Gln Trp Asn Lys Val Ile Glu Gln
225                 230                 235                 240
ctt gga aca cca tgt cct gaa ttc atg aag aaa ctg caa cca aca gta    768
Leu Gly Thr Pro Cys Pro Glu Phe Met Lys Lys Leu Gln Pro Thr Val
                245                 250                 255
agg act tac gtt gaa aac aga cct aaa tat gct gga tat agc ttt gag    816
Arg Thr Tyr Val Glu Asn Arg Pro Lys Tyr Ala Gly Tyr Ser Phe Glu
                260                 265                 270
aaa ctc ttc cct gat gtc ctt ttc cca gct gac tca gaa cac aac aaa    864
Lys Leu Phe Pro Asp Val Leu Phe Pro Ala Asp Ser Glu His Asn Lys
            275                 280                 285
ctt aaa gcc agt cag gca agg gat ttg tta tcc aaa atg ctg gta ata    912
Leu Lys Ala Ser Gln Ala Arg Asp Leu Leu Ser Lys Met Leu Val Ile
        290                 295                 300
gat gca tct aaa agg atc tct gta gat gaa gct ctc caa cac ccg tac    960
Asp Ala Ser Lys Arg Ile Ser Val Asp Glu Ala Leu Gln His Pro Tyr
305                 310                 315                 320
atc aat gtc tgg tat gat cct tct gaa gca gaa gct cca cca cca aag   1008
Ile Asn Val Trp Tyr Asp Pro Ser Glu Ala Glu Ala Pro Pro Pro Lys
                325                 330                 335
atc cct gac aag cag tta gat gaa agg gaa cac aca ata gaa gag tgg   1056
Ile Pro Asp Lys Gln Leu Asp Glu Arg Glu His Thr Ile Glu Glu Trp
            340                 345                 350
aaa gaa ttg ata tat aag gaa gtt atg gac ttg gag gag aga acc aag   1104
Lys Glu Leu Ile Tyr Lys Glu Val Met Asp Leu Glu Glu Arg Thr Lys
                355                 360                 365
aat gga gtt ata cgg ggg cag ccc tct cct tta gca cag gtg cag cag   1152
Asn Gly Val Ile Arg Gly Gln Pro Ser Pro Leu Ala Gln Val Gln Gln
        370                 375                 380
tgg gat cca ccg gtc gcc acc atg gtg agc aag ggc gag gag ctg ttc   1200
Trp Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe
385                 390                 395                 400
acc ggg gtg gtg ccc atc ctg gtc gag ctg gac ggc gac gta aac ggc   1248
Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly
                405                 410                 415
cac aag ttc agc gtg tcc ggc gag ggc gag ggc gat gcc acc tac ggc   1296
His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly
            420                 425                 430
aag ctg acc ctg aag ttc atc tgc acc acc ggc aag ctg ccc gtg ccc   1344
Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro
        435                 440                 445
tgg ccc acc ctc gtg acc acc ctg acc tac ggc gtg cag tgc ttc agc   1392
Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser
        450                 455                 460
cgc tac ccc gac cac atg aag cag cac gac ttc ttc aag tcc gcc atg   1440
Arg Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met
465                 470                 475                 480
ccc gaa ggc tac gtc cag gag cgc acc atc ttc ttc aag gac gac ggc   1488
Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly
                485                 490                 495
aac tac aag acc cgc gcc gag gtg aag ttc gag ggc gac acc ctg gtg   1536
Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val
                500                 505                 510
aac cgc atc gag ctg aag ggc atc gac ttc aag gag gac ggc aac atc   1584
```

66

```
Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile
        515                 520                 525
ctg ggg cac aag ctg gag tac aac tac aac agc cac aac gtc tat atc        1632
Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile
        530                 535                 540
atg gcc gac aag cag aag aac ggc atc aag gtg aac ttc aag atc cgc        1680
Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg
545                 550                 555                 560
cac aac atc gag gac ggc agc gtg cag ctc gcc gac cac tac cag cag        1728
His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln
                    565                 570                 575
aac acc ccc atc ggc gac ggc ccc gtg ctg ctg ccc gac aac cac tac        1776
Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr
                580                 585                 590
ctg agc acc cag tcc gcc ctg agc aaa gac ccc aac gag aag cgc gat        1824
Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp
            595                 600                 605
cac atg gtc ctg ctg gag ttc gtg acc gcc gcc ggg atc act ctc ggc        1872
His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly
        610                 615                 620
atg gac gag ctg tac aag taa                                            1893
Met Asp Glu Leu Tyr Lys
625                 630
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<210> 63

<211> 630

<212> PRT

<213> Artificial Sequence

<220>

<223> Jnk1-EGFP Fusion

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<400> 63
Met Ser Arg Ser Lys Arg Asp Asn Asn Phe Tyr Ser Val Glu Ile Gly
1               5                   10                  15
Asp Ser Thr Phe Thr Val Leu Lys Arg Tyr Gln Asn Leu Lys Pro Ile
            20                  25                  30
Gly Ser Gly Ala Gln Gly Ile Val Cys Ala Ala Tyr Asp Ala Ile Leu
        35                  40                  45
Glu Arg Asn Val Ala Ile Lys Lys Leu Ser Arg Pro Phe Gln Asn Gln
    50                  55                  60
Thr His Ala Lys Arg Ala Tyr Arg Glu Leu Val Leu Met Lys Cys Val
65                  70                  75                  80
Asn His Lys Asn Ile Ile Gly Leu Leu Asn Val Phe Thr Pro Gln Lys
                85                  90                  95
Ser Leu Glu Glu Phe Gln Asp Val Tyr Ile Val Met Glu Leu Met Asp
            100                 105                 110
Ala Asn Leu Cys Gln Val Ile Gln Met Glu Leu Asp His Glu Arg Met
        115                 120                 125
Ser Tyr Leu Leu Tyr Gln Met Leu Cys Gly Ile Lys His Leu His Ser
    130                 135                 140
Ala Gly Ile Ile His Arg Asp Leu Lys Pro Ser Asn Ile Val Val Lys
145                 150                 155                 160
Ser Asp Cys Thr Leu Lys Ile Leu Asp Phe Gly Leu Ala Arg Thr Ala
                165                 170                 175
```

```
Gly Thr Ser Phe Met Met Thr Pro Tyr Val Val Thr Arg Tyr Tyr Arg
        180                 185                 190
Ala Pro Glu Val Ile Leu Gly Met Gly Tyr Lys Glu Asn Val Asp Leu
        195                 200                 205
Trp Ser Val Gly Cys Ile Met Gly Glu Met Val Cys His Lys Ile Leu
    210                 215                 220
Phe Pro Gly Arg Asp Tyr Ile Asp Gln Trp Asn Lys Val Ile Glu Gln
225                 230                 235                 240
Leu Gly Thr Pro Cys Pro Glu Phe Met Lys Lys Leu Gln Pro Thr Val
                245                 250                 255
Arg Thr Tyr Val Glu Asn Arg Pro Lys Tyr Ala Gly Tyr Ser Phe Glu
            260                 265                 270
Lys Leu Phe Pro Asp Val Leu Phe Pro Ala Asp Ser Glu His Asn Lys
        275                 280                 285
Leu Lys Ala Ser Gln Ala Arg Asp Leu Leu Ser Lys Met Leu Val Ile
    290                 295                 300
Asp Ala Ser Lys Arg Ile Ser Val Asp Glu Ala Leu Gln His Pro Tyr
305                 310                 315                 320
Ile Asn Val Trp Tyr Asp Pro Ser Glu Ala Glu Ala Pro Pro Pro Lys
                325                 330                 335
Ile Pro Asp Lys Gln Leu Asp Glu Arg Glu His Thr Ile Glu Glu Trp
            340                 345                 350
Lys Glu Leu Ile Tyr Lys Glu Val Met Asp Leu Glu Glu Arg Thr Lys
        355                 360                 365
Asn Gly Val Ile Arg Gly Gln Pro Ser Pro Leu Ala Gln Val Gln Gln
    370                 375                 380
Trp Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe
385                 390                 395                 400
Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly
                405                 410                 415
His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly
            420                 425                 430
Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro
        435                 440                 445
Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser
    450                 455                 460
Arg Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met
465                 470                 475                 480
Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly
                485                 490                 495
Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val
            500                 505                 510
Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile
        515                 520                 525
Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile
    530                 535                 540
Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg
545                 550                 555                 560
His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln
                565                 570                 575
Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr
            580                 585                 590
Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp
        595                 600                 605
His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly
    610                 615                 620
Met Asp Glu Leu Tyr Lys
625                 630
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<210> 64
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68
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<211> 1821

<212> DNA

<213> Artificial Sequence

<220>

<223> p38-EGFP fusion

<220>

<221> CDS

<222> (1)..(1818)

<400> 64

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atg tct cag gag agg ccc acg ttc tac cgg cag gag ctg aac aag aca       48
Met Ser Gln Glu Arg Pro Thr Phe Tyr Arg Gln Glu Leu Asn Lys Thr
1               5                   10                  15
atc tgg gag gtg ccc gag cgt tac cag aac ctg tct cca gtg ggc tct       96
Ile Trp Glu Val Pro Glu Arg Tyr Gln Asn Leu Ser Pro Val Gly Ser
            20                  25                  30
ggc gcc tat ggc tct gtg tgt gct gct ttt gac aca aaa acg ggg tta      144.
Gly Ala Tyr Gly Ser Val Cys Ala Ala Phe Asp Thr Lys Thr Gly Leu
        35                  40                  45
cgt gtg gca gtg aag aag ctc tcc aga cca ttt cag tcc atc att cat      192
Arg Val Ala Val Lys Lys Leu Ser Arg Pro Phe Gln Ser Ile Ile His
    50                  55                  60
gcg aaa aga acc tac aga gaa ctg cgg tta ctt aaa cat atg aaa cat      240
Ala Lys Arg Thr Tyr Arg Glu Leu Arg Leu Leu Lys His Met Lys His
65                  70                  75                  80
gaa aat gtg att ggt ctg ttg gac gtt ttt aca cct gca agg tct ctg      288
Glu Asn Val Ile Gly Leu Leu Asp Val Phe Thr Pro Ala Arg Ser Leu
                85                  90                  95
gag gaa ttc aat gat gtg tat ctg gtg acc cat ctc atg ggg gca gat      336
Glu Glu Phe Asn Asp Val Tyr Leu Val Thr His Leu Met Gly Ala Asp
            100                 105                 110
ctg aac aac att gtg aaa tgt cag aag ctt aca gat gac cat gtt cag      384
Leu Asn Asn Ile Val Lys Cys Gln Lys Leu Thr Asp Asp His Val Gln
        115                 120                 125
ttc ctt atc tac caa att ctc cga ggt cta aag tat ata cat tca gct      432
Phe Leu Ile Tyr Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser Ala
    130                 135                 140
gac ata att cac agg gac cta aaa cct agt aat cta gct gtg aat gaa      480
Asp Ile Ile His Arg Asp Leu Lys Pro Ser Asn Leu Ala Val Asn Glu
145                 150                 155                 160
gac tgt gag ctg aag att ctg gat ttt gga ctg gct cgg cac aca gat      528
Asp Cys Glu Leu Lys Ile Leu Asp Phe Gly Leu Ala Arg His Thr Asp
                165                 170                 175
gat gaa atg aca ggc tac gtg gcc act agg tgg tac agg gct cct gag      576
Asp Glu Met Thr Gly Tyr Val Ala Thr Arg Trp Tyr Arg Ala Pro Glu
            180                 185                 190
atc atg ctg aac tgg atg cat tac aac cag aca gtt gat att tgg tca      624
Ile Met Leu Asn Trp Met His Tyr Asn Gln Thr Val Asp Ile Trp Ser
        195                 200                 205
gtg gga tgc ata atg gcc gag ctg ttg act gga aga aca ttg ttt cct      672
Val Gly Cys Ile Met Ala Glu Leu Leu Thr Gly Arg Thr Leu Phe Pro
    210                 215                 220
```

69

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ggt aca gac cat att gat cag ttg aag ctc att tta aga ctc gtt gga    720
Gly Thr Asp His Ile Asp Gln Leu Lys Leu Ile Leu Arg Leu Val Gly
225             230             235             240
acc cca ggg gct gag ctt ttg aag aaa atc tcc tca gag tct gca aga    768
Thr Pro Gly Ala Glu Leu Leu Lys Lys Ile Ser Ser Glu Ser Ala Arg
            245             250             255
aac tat att cag tct ttg act cag atg ccg aag atg aac ttt gcg aat    816
Asn Tyr Ile Gln Ser Leu Thr Gln Met Pro Lys Met Asn Phe Ala Asn
            260             265             270
gta ttt att ggt gcc aat ccc ctg gct gtc gac ttg ctg gag aag atg    864
Val Phe Ile Gly Ala Asn Pro Leu Ala Val Asp Leu Leu Glu Lys Met
            275             280             285
ctt gta ttg gac tca gat aag aga att aca gcg gcc caa gcc ctt gca    912
Leu Val Leu Asp Ser Asp Lys Arg Ile Thr Ala Ala Gln Ala Leu Ala
            290             295             300
cat gcc tac ttt gct cag tac cac gat cct gat gat gaa cca gtg gcc    960
His Ala Tyr Phe Ala Gln Tyr His Asp Pro Asp Asp Glu Pro Val Ala
305             310             315             320
gat cct tat gat cag tcc ttt gaa agc agg gac ctc ctt ata gat gag   1008
Asp Pro Tyr Asp Gln Ser Phe Glu Ser Arg Asp Leu Leu Ile Asp Glu
            325             330             335
tgg aaa agc ctg acc tat gat gaa gtc atc agc ttt gtg cca cca ccc   1056
Trp Lys Ser Leu Thr Tyr Asp Glu Val Ile Ser Phe Val Pro Pro Pro
            340             345             350
ctt gac caa gaa gag atg gag tcc gag gat cca ccg gtc gcc acc atg   1104
Leu Asp Gln Glu Glu Met Glu Ser Glu Asp Pro Pro Val Ala Thr Met
            355             360             365
gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc   1152
Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val
            370             375             380
gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag   1200
Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu
385             390             395             400
ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc   1248
Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys
            405             410             415
acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg   1296
Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu
            420             425             430
acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag   1344
Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln
            435             440             445
cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc   1392
His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg
            450             455             460
acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag gtg   1440
Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val
465             470             475             480
aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc atc   1488
Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile
            485             490             495
gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac aac   1536
Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn
            500             505             510
tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac ggc   1584
Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly
            515             520             525
atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc gtg   1632
Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val
            530             535             540
cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc ccc   1680
Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro
545             550             555             560
```

70

```
gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg agc       1728
Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser
                565                 570                 575
aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc gtg       1776
Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val
                580                 585                 590
acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag taa          1821
Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
                595                 600                 605
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<210> 65

<211> 606

<212> PRT

<213> Artificial Sequence

<220>

<223> p38-EGFP fusion

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<400>  65
Met Ser Gln Glu Arg Pro Thr Phe Tyr Arg Gln Glu Leu Asn Lys Thr
1               5                   10                  15
Ile Trp Glu Val Pro Glu Arg Tyr Gln Asn Leu Ser Pro Val Gly Ser
                20                  25                  30
Gly Ala Tyr Gly Ser Val Cys Ala Ala Phe Asp Thr Lys Thr Gly Leu
            35                  40                  45
Arg Val Ala Val Lys Lys Leu Ser Arg Pro Phe Gln Ser Ile Ile His
        50                  55                  60
Ala Lys Arg Thr Tyr Arg Glu Leu Arg Leu Leu Lys His Met Lys His
65                  70                  75                  80
Glu Asn Val Ile Gly Leu Leu Asp Val Phe Thr Pro Ala Arg Ser Leu
                85                  90                  95
Glu Glu Phe Asn Asp Val Tyr Leu Val Thr His Leu Met Gly Ala Asp
                100                 105                 110
Leu Asn Asn Ile Val Lys Cys Gln Lys Leu Thr Asp Asp His Val Gln
            115                 120                 125
Phe Leu Ile Tyr Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser Ala
    130                 135                 140
Asp Ile Ile His Arg Asp Leu Lys Pro Ser Asn Leu Ala Val Asn Glu
145                 150                 155                 160
Asp Cys Glu Leu Lys Ile Leu Asp Phe Gly Leu Ala Arg His Thr Asp
                165                 170                 175
Asp Glu Met Thr Gly Tyr Val Ala Thr Arg Trp Tyr Arg Ala Pro Glu
                180                 185                 190
Ile Met Leu Asn Trp Met His Tyr Asn Gln Thr Val Asp Ile Trp Ser
            195                 200                 205
Val Gly Cys Ile Met Ala Glu Leu Leu Thr Gly Arg Thr Leu Phe Pro
        210                 215                 220
Gly Thr Asp His Ile Asp Gln Leu Lys Leu Ile Leu Arg Leu Val Gly
225                 230                 235                 240
Thr Pro Gly Ala Glu Leu Leu Lys Lys Ile Ser Ser Glu Ser Ala Arg
                245                 250                 255
Asn Tyr Ile Gln Ser Leu Thr Gln Met Pro Lys Met Asn Phe Ala Asn
                260                 265                 270
Val Phe Ile Gly Ala Asn Pro Leu Ala Val Asp Leu Leu Glu Lys Met
            275                 280                 285
Leu Val Leu Asp Ser Asp Lys Arg Ile Thr Ala Ala Gln Ala Leu Ala
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71

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                290                    295                    300
His Ala Tyr Phe Ala Gln Tyr His Asp Pro Asp Asp Glu Pro Val Ala
305                    310                    315                    320
Asp Pro Tyr Asp Gln Ser Phe Glu Ser Arg Asp Leu Leu Ile Asp Glu
                325                    330                    335
Trp Lys Ser Leu Thr Tyr Asp Glu Val Ile Ser Phe Val Pro Pro Pro
                340                    345                    350
Leu Asp Gln Glu Glu Met Glu Ser Glu Asp Pro Pro Val Ala Thr Met
                355                    360                    365
Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val
                370                    375                    380
Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu
385                    390                    395                    400
Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys
                405                    410                    415
Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu
                420                    425                    430
Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln
                435                    440                    445
His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg
                450                    455                    460
Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val
465                    470                    475                    480
Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile
                485                    490                    495
Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn
                500                    505                    510
Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly
                515                    520                    525
Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val
                530                    535                    540
Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro
545                    550                    555                    560
Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser
                565                    570                    575
Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val
                580                    585                    590
Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
                595                    600                    605
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<210> 66

<211> 2913

<212> DNA

<213> Artificial Sequence

<220>

<223> p85alpha-EGFP fusion

<220>

<221> CDS

<222> (1)..(2910)

<400> 66

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atg agt gct gag ggg tac cag tac aga gcg ctg tat gat tat aaa aag       48
Met Ser Ala Glu Gly Tyr Gln Tyr Arg Ala Leu Tyr Asp Tyr Lys Lys
1               5                   10                  15
gaa aga gaa gaa gat att gac ttg cac ttg ggt gac ata ttg act gtg       96
Glu Arg Glu Glu Asp Ile Asp Leu His Leu Gly Asp Ile Leu Thr Val
                20                  25                  30
aat aaa ggg tcc tta gta gct ctt gga ttc agt gat gga cag gaa gcc      144
Asn Lys Gly Ser Leu Val Ala Leu Gly Phe Ser Asp Gly Gln Glu Ala
            35                  40                  45
agg cct gaa gaa att ggc tgg tta aat ggc tat aat gaa acc aca ggg      192
Arg Pro Glu Glu Ile Gly Trp Leu Asn Gly Tyr Asn Glu Thr Thr Gly
        50                  55                  60
gaa agg ggg gac ttt ccg gga act tac gta gaa tat att gga agg aaa      240
Glu Arg Gly Asp Phe Pro Gly Thr Tyr Val Glu Tyr Ile Gly Arg Lys
65                  70                  75                  80
aaa atc tcg cct ccc aca cca aag ccc cgg cca cct cgg cct ctt cct      288
Lys Ile Ser Pro Pro Thr Pro Lys Pro Arg Pro Pro Arg Pro Leu Pro
                85                  90                  95
gtt gca cca ggt tct tcg aaa act gaa gca gat gtt gaa caa caa gct      336
Val Ala Pro Gly Ser Ser Lys Thr Glu Ala Asp Val Glu Gln Gln Ala
            100                 105                 110
ttg act ctc ccg gat ctt gca gag cag ttt gcc cct cct gac att gcc      384
Leu Thr Leu Pro Asp Leu Ala Glu Gln Phe Ala Pro Pro Asp Ile Ala
        115                 120                 125
ccg cct ctt ctt atc aag ctc gtg gaa gcc att gaa aag aaa ggt ctg      432
Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu Lys Lys Gly Leu
        130                 135                 140
gaa tgt tca act cta tac aga aca cag agc tcc agc aac ctg gca gaa      480
Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser Asn Leu Ala Glu
145                 150                 155                 160
tta cga cag ctt ctt gat tgt gat aca ccc tcc gtg gac ttg gaa atg      528
Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val Asp Leu Glu Met
                165                 170                 175
atc gat gtg cac gtt ttg gct gac gct ttc aaa cgc tat ctc ctg gac      576
Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg Tyr Leu Leu Asp
            180                 185                 190
tta cca aat cct gtc att cca gca gcc gtt tac agt gaa atg att tct      624
Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser Glu Met Ile Ser
        195                 200                 205
tta gct cca gaa gta caa agc tcc gaa gaa tat att cag cta ttg aag      672
Leu Ala Pro Glu Val Gln Ser Ser Glu Glu Tyr Ile Gln Leu Leu Lys
        210                 215                 220
aag ctt att agg tcg cct agc ata cct cat cag tat tgg ctt acg ctt      720
Lys Leu Ile Arg Ser Pro Ser Ile Pro His Gln Tyr Trp Leu Thr Leu
225                 230                 235                 240
cag tat ttg tta aaa cat ttc ttc aag ctc tct caa acc tcc agc aaa      768
Gln Tyr Leu Leu Lys His Phe Phe Lys Leu Ser Gln Thr Ser Ser Lys
                245                 250                 255
aat ctg ttg aat gca aga gta ctc tct gaa att ttc agc cct atg ctt      816
Asn Leu Leu Asn Ala Arg Val Leu Ser Glu Ile Phe Ser Pro Met Leu
            260                 265                 270
ttc aga ttc tca gca gcc agc tct gat aat act gaa aac ctc ata aaa      864
Phe Arg Phe Ser Ala Ala Ser Ser Asp Asn Thr Glu Asn Leu Ile Lys
        275                 280                 285
gtt ata gaa att tta atc tca act gaa tgg aat gaa cga cag cct gca      912
Val Ile Glu Ile Leu Ile Ser Thr Glu Trp Asn Glu Arg Gln Pro Ala
        290                 295                 300
cca gca ctg cct cct aaa cca cca aaa cct act act gta gcc aac aac      960
Pro Ala Leu Pro Pro Lys Pro Pro Lys Pro Thr Thr Val Ala Asn Asn
305                 310                 315                 320
ggt atg aat aac aat atg tcc tta caa aat gct gaa tgg tac tgg gga     1008
Gly Met Asn Asn Asn Met Ser Leu Gln Asn Ala Glu Trp Tyr Trp Gly
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73

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                      325                       330                       335
gat atc tcg agg gaa gaa gtg aat gaa aaa ctt cga gat aca gca gac    1056
Asp Ile Ser Arg Glu Glu Val Asn Glu Lys Leu Arg Asp Thr Ala Asp
              340                       345                       350
ggg acc ttt ttg gta cga gat gcg tct act aaa atg cat ggt gat tat    1104
Gly Thr Phe Leu Val Arg Asp Ala Ser Thr Lys Met His Gly Asp Tyr
          355                       360                       365
act ctt aca cta agg aaa ggg gga aat aac aaa tta atc aaa ata ttt    1152
Thr Leu Thr Leu Arg Lys Gly Gly Asn Asn Lys Leu Ile Lys Ile Phe
      370                       375                       380
cat cga gat ggg aaa tat ggc ttc tct gac cca tta acc ttc agt tct    1200
His Arg Asp Gly Lys Tyr Gly Phe Ser Asp Pro Leu Thr Phe Ser Ser
385                       390                       395                       400
gtg gtt gaa tta ata aac cac tac cgg aat gaa tct cta gct cag tat    1248
Val Val Glu Leu Ile Asn His Tyr Arg Asn Glu Ser Leu Ala Gln Tyr
                      405                       410                       415
aat ccc aaa ttg gat gtg aaa tta ctt tat cca gta tcc aaa tac caa    1296
Asn Pro Lys Leu Asp Val Lys Leu Leu Tyr Pro Val Ser Lys Tyr Gln
              420                       425                       430
cag gat caa gtt gtc aaa gaa gat aat att gaa gct gta ggg aaa aaa    1344
Gln Asp Gln Val Val Lys Glu Asp Asn Ile Glu Ala Val Gly Lys Lys
          435                       440                       445
tta cat gaa tat aac act cag ttt caa gaa aaa agt cga gaa tat gat    1392
Leu His Glu Tyr Asn Thr Gln Phe Gln Glu Lys Ser Arg Glu Tyr Asp
      450                       455                       460
aga tta tat gaa gaa tat acc cgc aca tcc cag gaa atc caa atg aaa    1440
Arg Leu Tyr Glu Glu Tyr Thr Arg Thr Ser Gln Glu Ile Gln Met Lys
465                       470                       475                       480
agg aca gct att gaa gca ttt aat gaa acc ata aaa ata ttt gaa gaa    1488
Arg Thr Ala Ile Glu Ala Phe Asn Glu Thr Ile Lys Ile Phe Glu Glu
                      485                       490                       495
cag tgc cag acc caa gag cgg tac agc aaa gaa tac ata gaa aag ttt    1536
Gln Cys Gln Thr Gln Glu Arg Tyr Ser Lys Glu Tyr Ile Glu Lys Phe
              500                       505                       510
aaa cgt gaa ggc aat gag aaa gaa ata caa agg att atg cat aat tat    1584
Lys Arg Glu Gly Asn Glu Lys Glu Ile Gln Arg Ile Met His Asn Tyr
          515                       520                       525
gat aag ttg aag tct cga atc agt gaa att att gac agt aga aga aga    1632
Asp Lys Leu Lys Ser Arg Ile Ser Glu Ile Ile Asp Ser Arg Arg Arg
          530                       535                       540
ttg gaa gaa gac ttg aag aag cag gca gct gag tat cga gaa att gac    1680
Leu Glu Glu Asp Leu Lys Lys Gln Ala Ala Glu Tyr Arg Glu Ile Asp
545                       550                       555                       560
aaa cgt atg aac agc att aaa cca gac ctt atc cag ctg aga aag acg    1728
Lys Arg Met Asn Ser Ile Lys Pro Asp Leu Ile Gln Leu Arg Lys Thr
                      565                       570                       575
aga gac caa tac ttg atg tgg ttg act caa aaa ggt gtt cgg caa aag    1776
Arg Asp Gln Tyr Leu Met Trp Leu Thr Gln Lys Gly Val Arg Gln Lys
              580                       585                       590
aag ttg aac gag tgg ttg ggc aat gaa aac act gaa gac caa tat tca    1824
Lys Leu Asn Glu Trp Leu Gly Asn Glu Asn Thr Glu Asp Gln Tyr Ser
          595                       600                       605
ctg gtg gaa gat gat gaa gat ttg ccc cat cat gat gag aag aca tgg    1872
Leu Val Glu Asp Asp Glu Asp Leu Pro His His Asp Glu Lys Thr Trp
      610                       615                       620
aat gtt gga agc agc aac cga aac aaa gct gaa aac ctg ttg cga ggg    1920
Asn Val Gly Ser Ser Asn Arg Asn Lys Ala Glu Asn Leu Leu Arg Gly
625                       630                       635                       640
aag cga gat ggc act ttt ctt gtc cgg gag agc agt aaa cag ggc tgc    1968
Lys Arg Asp Gly Thr Phe Leu Val Arg Glu Ser Ser Lys Gln Gly Cys
              645                       650                       655
tat gcc tgc tct gta gtg gtg gac ggc gaa gta aag cat tgt gtc ata    2016
Tyr Ala Cys Ser Val Val Val Asp Gly Glu Val Lys His Cys Val Ile
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74

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aac aaa aca gca act ggc tat ggc ttt gcc gag ccc tat aac ttg tac    2064
Asn Lys Thr Ala Thr Gly Tyr Gly Phe Ala Glu Pro Tyr Asn Leu Tyr
        675                      680                      685
agc tct ctg aaa gaa ctg gtg cta cat tac caa cac acc tcc ctt gtg    2112
Ser Ser Leu Lys Glu Leu Val Leu His Tyr Gln His Thr Ser Leu Val
        690                      695                      700
cag cac aac gac tcc ctc aat gtc aca cta gcc tac cca gta tat gca    2160
Gln His Asn Asp Ser Leu Asn Val Thr Leu Ala Tyr Pro Val Tyr Ala
705                      710                      715              720
cag cag agg cga cag gat cca ccg gtc gcc acc atg gtg agc aag ggc    2208
Gln Gln Arg Arg Gln Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly
                725                      730                      735
gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc gag ctg gac ggc    2256
Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly
            740                      745                      750
gac gta aac ggc cac aag ttc agc gtg tcc ggc gag ggc gag ggc gat    2304
Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp
        755                      760                      765
gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc acc acc ggc aag    2352
Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys
770                      775                      780
ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg acc tac ggc gtg    2400
Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val
785                      790                      795              800
cag tgc ttc agc cgc tac ccc gac cac atg aag cag cac gac ttc ttc    2448
Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His Asp Phe Phe
                805                      810                      815
aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc acc atc ttc ttc    2496
Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe
                820                      825                      830
aag gac gac ggc aac tac aag acc cgc gcc gag gtg aag ttc gag ggc    2544
Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly
                835                      840                      845
gac acc ctg gtg aac cgc atc gag ctg aag ggc atc gac ttc aag gag    2592
Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu
        850                      855                      860
gac ggc aac atc ctg ggg cac aag ctg gag tac aac tac aac agc cac    2640
Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His
865                      870                      875              880
aac gtc tat atc atg gcc gac aag cag aag aac ggc atc aag gtg aac    2688
Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn
                885                      890                      895
ttc aag atc cgc cac aac atc gag gac ggc agc gtg cag ctc gcc gac    2736
Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp
                900                      905                      910
cac tac cag cag aac acc ccc atc ggc gac ggc ccc gtg ctg ctg ccc    2784
His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro
        915                      920                      925
gac aac cac tac ctg agc acc cag tcc gcc ctg agc aaa gac ccc aac    2832
Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn
        930                      935                      940
gag aag cgc gat cac atg gtc ctg ctg gag ttc gtg acc gcc gcc ggg    2880
Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly
945                      950                      955              960
atc act ctc ggc atg gac gag ctg tac aag taa                        2913
Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
                965                      970
```

<210> 67

<211> 970

<212> PRT

<213> Artificial Sequence

<220>

<223> p85alpha-EGFP fusion

<400> 67
Met Ser Ala Glu Gly Tyr Gln Tyr Arg Ala Leu Tyr Asp Tyr Lys Lys
1   5   10   15
Glu Arg Glu Glu Asp Ile Asp Leu His Leu Gly Asp Ile Leu Thr Val
            20   25   30
Asn Lys Gly Ser Leu Val Ala Leu Gly Phe Ser Asp Gly Gln Glu Ala
        35   40   45
Arg Pro Glu Glu Ile Gly Trp Leu Asn Gly Tyr Asn Glu Thr Thr Gly
    50   55   60
Glu Arg Gly Asp Phe Pro Gly Thr Tyr Val Glu Tyr Ile Gly Arg Lys
65   70   75   80
Lys Ile Ser Pro Pro Thr Pro Lys Pro Arg Pro Pro Arg Pro Leu Pro
                85   90   95
Val Ala Pro Gly Ser Ser Lys Thr Glu Ala Asp Val Glu Gln Gln Ala
            100   105   110
Leu Thr Leu Pro Asp Leu Ala Glu Gln Phe Ala Pro Pro Asp Ile Ala
        115   120   125
Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu Lys Lys Gly Leu
    130   135   140
Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser Asn Leu Ala Glu
145   150   155   160
Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val Asp Leu Glu Met
            165   170   175
Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg Tyr Leu Leu Asp
            180   185   190
Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser Glu Met Ile Ser
        195   200   205
Leu Ala Pro Glu Val Gln Ser Ser Glu Glu Tyr Ile Gln Leu Leu Lys
    210   215   220
Lys Leu Ile Arg Ser Pro Ser Ile Pro His Gln Tyr Trp Leu Thr Leu
225   230   235   240
Gln Tyr Leu Leu Lys His Phe Phe Lys Leu Ser Gln Thr Ser Ser Lys
                245   250   255
Asn Leu Leu Asn Ala Arg Val Leu Ser Glu Ile Phe Ser Pro Met Leu
            260   265   270
Phe Arg Phe Ser Ala Ala Ser Ser Asp Asn Thr Glu Asn Leu Ile Lys
        275   280   285
Val Ile Glu Ile Leu Ile Ser Thr Glu Trp Asn Glu Arg Gln Pro Ala
    290   295   300
Pro Ala Leu Pro Pro Lys Pro Pro Lys Pro Thr Thr Val Ala Asn Asn
305   310   315   320
Gly Met Asn Asn Asn Met Ser Leu Gln Asn Ala Glu Trp Tyr Trp Gly
                325   330   335
Asp Ile Ser Arg Glu Glu Val Asn Glu Lys Leu Arg Asp Thr Ala Asp
            340   345   350
Gly Thr Phe Leu Val Arg Asp Ala Ser Thr Lys Met His Gly Asp Tyr
        355   360   365
Thr Leu Thr Leu Arg Lys Gly Gly Asn Asn Lys Leu Ile Lys Ile Phe
    370   375   380
His Arg Asp Gly Lys Tyr Gly Phe Ser Asp Pro Leu Thr Phe Ser Ser
385   390   395   400

76

Val Val Glu Leu Ile Asn His Tyr Arg Asn Glu Ser Leu Ala Gln Tyr
                405   410   415
Asn Pro Lys Leu Asp Val Lys Leu Leu Tyr Pro Val Ser Lys Tyr Gln
            420   425   430
Gln Asp Gln Val Val Lys Glu Asp Asn Ile Glu Ala Val Gly Lys Lys
            435   440   445
Leu His Glu Tyr Asn Thr Gln Phe Gln Glu Lys Ser Arg Glu Tyr Asp
    450   455   460
Arg Leu Tyr Glu Glu Tyr Thr Arg Thr Ser Gln Glu Ile Gln Met Lys
465   470   475   480
Arg Thr Ala Ile Glu Ala Phe Asn Glu Thr Ile Lys Ile Phe Glu Glu
            485   490   495
Gln Cys Gln Thr Gln Glu Arg Tyr Ser Lys Glu Tyr Ile Glu Lys Phe
            500   505   510
Lys Arg Glu Gly Asn Glu Lys Glu Ile Gln Arg Ile Met His Asn Tyr
        515   520   525
Asp Lys-Leu Lys Ser Arg Ile Ser Glu Ile Ile Asp Ser Arg Arg Arg
    530   535   540
Leu Glu Glu Asp Leu Lys Lys Gln Ala Ala Glu Tyr Arg Glu Ile Asp
545   550   555   560
Lys Arg Met Asn Ser Ile Lys Pro Asp Leu Ile Gln Leu Arg Lys Thr
                565   570   575
Arg Asp Gln Tyr Leu Met Trp Leu Thr Gln Lys Gly Val Arg Gln Lys
            580   585   590
Lys Leu Asn Glu Trp Leu Gly Asn Glu Asn Thr Glu Asp Gln Tyr Ser
        595   600   605
Leu Val Glu Asp Asp Glu Asp Leu Pro His His Asp Glu Lys Thr Trp
    610   615   620
Asn Val Gly Ser Ser Asn Arg Asn Lys Ala Glu Asn Leu Leu Arg Gly
625   630   635   640
Lys Arg Asp Gly Thr Phe Leu Val Arg Glu Ser Ser Lys Gln Gly Cys
                645   650   655
Tyr Ala Cys Ser Val Val Val Asp Gly Glu Val Lys His Cys Val Ile
            660   665   670
Asn Lys Thr Ala Thr Gly Tyr Gly Phe Ala Glu Pro Tyr Asn Leu Tyr
        675   680   685
Ser Ser Leu Lys Glu Leu Val Leu His Tyr Gln His Thr Ser Leu Val
        690   695   700
Gln His Asn Asp Ser Leu Asn Val Thr Leu Ala Tyr Pro Val Tyr Ala
705   710   715   720
Gln Gln Arg Arg Gln Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly
                725   730   735
Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly
            740   745   750
Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp
        755   760   765
Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys
    770   775   780
Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val
785   790   795   800
Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His Asp Phe Phe
                805   810   815
Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe
            820   825   830
Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly
        835   840   845
Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu
    850   855   860
Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His
865   870   875   880
Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn
                885   890   895
    Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp

77

```
              900                    905                     910
His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro
        915                    920                     925
Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn
    930                    935                     940
Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly
945                    950                     955                 960
Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
                  965                    970
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<210> 68

<211> 1788

<212> DNA

<213> Artificial Sequence

<220>

<223> Fusion Construct

<220>

<221> CDS

<222> (1)..(1785)


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<400> 68
atg ggc aac gcc gcc gcc gcc aag aag ggc agc gag cag gag agc gtg      48
Met Gly Asn Ala Ala Ala Ala Lys Lys Gly Ser Glu Gln Glu Ser Val
1               5                   10                  15
aaa gag ttc cta gcc aaa gcc aag gaa gat ttc ctg aaa aaa tgg gaa      96
Lys Glu Phe Leu Ala Lys Ala Lys Glu Asp Phe Leu Lys Lys Trp Glu
            20                  25                  30
gac ccc tct cag aat aca gcc cag ttg gat cag ttt gat aga atc aag     144
Asp Pro Ser Gln Asn Thr Ala Gln Leu Asp Gln Phe Asp Arg Ile Lys
        35                  40                  45
acc ctt ggc acc ggc tcc ttt ggg cga gtg atg ctg gtg aag cac aag     192
Thr Leu Gly Thr Gly Ser Phe Gly Arg Val Met Leu Val Lys His Lys
    50                  55                  60
gag agt ggg aac cac tac gcc atg aag atc tta gac aag cag aag gtg     240
Glu Ser Gly Asn His Tyr Ala Met Lys Ile Leu Asp Lys Gln Lys Val
65                  70                  75                  80
gtg aag cta aag cag atc gag cac act ctg aat gag aag cgc atc ctg     288
Val Lys Leu Lys Gln Ile Glu His Thr Leu Asn Glu Lys Arg Ile Leu
                85                  90                  95
cag gcc gtc aac ttc ccg ttc ctg gtc aaa ctt gaa ttc tcc ttc aag     336
Gln Ala Val Asn Phe Pro Phe Leu Val Lys Leu Glu Phe Ser Phe Lys
            100                 105                 110
gac aac tca aac ctg tac atg gtc atg gag tat gta gct ggt ggc gag     384
Asp Asn Ser Asn Leu Tyr Met Val Met Glu Tyr Val Ala Gly Gly Glu
            115                 120                 125
atg ttc tcc cac cta cgg cgg att gga agg ttc agc gag ccc cat gcc     432
Met Phe Ser His Leu Arg Arg Ile Gly Arg Phe Ser Glu Pro His Ala
        130                 135                 140
cgt ttc tac gcg gcg cag atc gtc ctg acc ttt gag tat ctg cac tcc     480
Arg Phe Tyr Ala Ala Gln Ile Val Leu Thr Phe Glu Tyr Leu His Ser
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78

```
       145                    150                     155                      160
ctg gac ctc atc tac cgg gac ctg aag ccc gag aat ctt ctc atc gac        528
Leu Asp Leu Ile Tyr Arg Asp Leu Lys Pro Glu Asn Leu Leu Ile Asp
                    165                     170                      175
cag cag ggc tat att cag gtg aca gac ttc ggt ttt gcc aag cgt gtg        576
Gln Gln Gly Tyr Ile Gln Val Thr Asp Phe Gly Phe Ala Lys Arg Val
                    180                     185                      190
aaa ggc cgt act tgg acc ttg tgt ggg acc cct gag tac ttg gcc ccc        624
Lys Gly Arg Thr Trp Thr Leu Cys Gly Thr Pro Glu Tyr Leu Ala Pro
                    195                     200                      205
gag att atc ctg agc aaa ggc tac aac aag gct gtg gac tgg tgg gct        672
Glu Ile Ile Leu Ser Lys Gly Tyr Asn Lys Ala Val Asp Trp Trp Ala
    210                     215                     220
ctc gga gtc ctc atc tac gag atg gct gct ggt tac cca ccc ttc ttc        720
Leu Gly Val Leu Ile Tyr Glu Met Ala Ala Gly Tyr Pro Pro Phe Phe
225                     230                     235                      240
gct gac cag cct atc cag atc tat gag aaa atc gtc tct ggg aag gtg        768
Ala Asp Gln Pro Ile Gln Ile Tyr Glu Lys Ile Val Ser Gly Lys Val
                    245                     250                      255
cgg ttc cca tcc cac ttc agc tct gac ttg aag gac ctg ctg cgg aac        816
Arg Phe Pro Ser His Phe Ser Ser Asp Leu Lys Asp Leu Leu Arg Asn
                    260                     265                      270
ctt ctg caa gtg gat cta acc aag cgc ttt gga aac ctc aag gac ggg        864
Leu Leu Gln Val Asp Leu Thr Lys Arg Phe Gly Asn Leu Lys Asp Gly
                    275                     280                      285
gtc aat gac atc aag aac cac aag tgg ttt gcc acg act gac tgg att        912
Val Asn Asp Ile Lys Asn His Lys Trp Phe Ala Thr Thr Asp Trp Ile
    290                     295                     300
gcc atc tat cag aga aag gtg gaa gct ccc ttc ata cca aag ttt aaa        960
Ala Ile Tyr Gln Arg Lys Val Glu Ala Pro Phe Ile Pro Lys Phe Lys
305                     310                     315                      320
ggc cct ggg gac acg agt aac ttt gac gac tat gag gag gaa gag atc       1008
Gly Pro Gly Asp Thr Ser Asn Phe Asp Asp Tyr Glu Glu Glu Glu Ile
                    325                     330                      335
cgg gtc tcc atc aat gag aag tgt ggc aag gag ttt act gag ttt ggg       1056
Arg Val Ser Ile Asn Glu Lys Cys Gly Lys Glu Phe Thr Glu Phe Gly
                    340                     345                      350
cgc gcc atg agt aaa gga gaa gaa ctt ttc act gga gtt gtc cca att       1104
Arg Ala Met Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile
    355                     360                     365
ctt gtt gaa tta gat ggc gat gtt aat ggg caa aaa ttc tct gtt agt       1152
Leu Val Glu Leu Asp Gly Asp Val Asn Gly Gln Lys Phe Ser Val Ser
    370                     375                     380
gga gag ggt gaa ggt gat gca aca tac gga aaa ctt acc ctt aaa ttt       1200
Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe
385                     390                     395                      400
att tgc act act ggg aag cta cct gtt cca tgg cca acg ctt gtc act       1248
Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr
                    405                     410                      415
act ctc act tat ggt gtt caa tgc ttt tct aga tac cca gat cat atg       1296
Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met
                    420                     425                      430
aaa cag cat gac ttt ttc aag agt gcc atg ccc gaa ggt tat gta cag       1344
Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln
                    435                     440                      445
gaa aga act ata ttt tac aaa gat gac ggg aac tac aag aca cgt gct       1392
Glu Arg Thr Ile Phe Tyr Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala
    450                     455                     460
gaa gtc aag ttt gaa ggt gat acc ctt gtt aat aga atc gag tta aaa       1440
Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys
465                     470                     475                      480
ggt att gat ttt aaa gaa gat gga aac att ctt gga cac aaa atg gaa       1488
Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Met Glu
```

79

```
                    485                 490                 495
tac aat tat aac tca cat aat gta tac atc atg gca gac aaa cca aag    1536
Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Pro Lys
            500                 505                 510
aat ggc atc aaa gtt aac ttc aaa att aga cac aac att aaa gat gga    1584
Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Lys Asp Gly
        515                 520                 525
agc gtt caa tta gca gac cat tat caa caa aat act cca att ggc gat    1632
Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp
        530                 535                 540
ggc cct gtc ctt tta cca gac aac cat tac ctg tcc acg caa tct gcc    1680
Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala
545                 550                 555                 560
ctt tcc aaa gat ccc aac gaa aag aga gat cac atg atc ctt ctt gag    1728
Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Ile Leu Leu Glu
                565                 570                 575
ttt gta aca gct gct ggg att aca cat ggc atg gat gaa cta tac aaa    1776
Phe Val Thr Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr Lys
            580                 585                 590
                                                                    1788
cct cag gag taa
Pro Gln Glu
        595


<210>  69

<211>  595

<212>  PRT

<213>  Artificial Sequence


<220>

<223>  Fusion Construct


<400>  69
Met Gly Asn Ala Ala Ala Ala Lys Lys Gly Ser Glu Gln Glu Ser Val
1               5                   10                  15
Lys Glu Phe Leu Ala Lys Ala Lys Glu Asp Phe Leu Lys Lys Trp Glu
            20                  25                  30
Asp Pro Ser Gln Asn Thr Ala Gln Leu Asp Gln Phe Asp Arg Ile Lys
        35                  40                  45
Thr Leu Gly Thr Gly Ser Phe Gly Arg Val Met Leu Val Lys His Lys
        50                  55                  60
Glu Ser Gly Asn His Tyr Ala Met Lys Ile Leu Asp Lys Gln Lys Val
65                  70                  75                  80
Val Lys Leu Lys Gln Ile Glu His Thr Leu Asn Glu Lys Arg Ile Leu
                85                  90                  95
Gln Ala Val Asn Phe Pro Phe Leu Val Lys Leu Glu Phe Ser Phe Lys
            100                 105                 110
Asp Asn Ser Asn Leu Tyr Met Val Met Glu Tyr Val Ala Gly Gly Glu
        115                 120                 125
Met Phe Ser His Leu Arg Arg Ile Gly Arg Phe Ser Glu Pro His Ala
    130                 135                 140
Arg Phe Tyr Ala Ala Gln Ile Val Leu Thr Phe Glu Tyr Leu His Ser
145                 150                 155                 160
Leu Asp Leu Ile Tyr Arg Asp Leu Lys Pro Glu Asn Leu Leu Ile Asp
                165                 170                 175
Gln Gln Gly Tyr Ile Gln Val Thr Asp Phe Gly Phe Ala Lys Arg Val
            180                 185                 190
```

80

Lys Gly Arg Thr Trp Thr Leu Cys Gly Thr Pro Glu Tyr Leu Ala Pro
        195   200   205
Glu Ile Ile Leu Ser Lys Gly Tyr Asn Lys Ala Val Asp Trp Trp Ala
    210   215   220
Leu Gly Val Leu Ile Tyr Glu Met Ala Ala Gly Tyr Pro Pro Phe Phe
225   230   235   240
Ala Asp Gln Pro Ile Gln Ile Tyr Glu Lys Ile Val Ser Gly Lys Val
                245   250   255
Arg Phe Pro Ser His Phe Ser Ser Asp Leu Lys Asp Leu Leu Arg Asn
            260   265   270
Leu Leu Gln Val Asp Leu Thr Lys Arg Phe Gly Asn Leu Lys Asp Gly
        275   280   285
Val Asn Asp Ile Lys Asn His Lys Trp Phe Ala Thr Thr Asp Trp Ile
    290   295   300
Ala Ile Tyr Gln Arg Lys Val Glu Ala Pro Phe Ile Pro Lys Phe Lys
305   310   315   320
Gly Pro Gly Asp Thr Ser Asn Phe Asp Asp Tyr Glu Glu Glu Glu Ile
                325   330   335
Arg Val Ser Ile Asn Glu Lys Cys Gly Lys Glu Phe Thr Glu Phe Gly
            340   345   350
Arg Ala Met Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile
        355   360   365
Leu Val Glu Leu Asp Gly Asp Val Asn Gly Gln Lys Phe Ser Val Ser
    370   375   380
Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe
385   390   395   400
Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr
            405   410   415
Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met
            420   425   430
Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln
        435   440   445
Glu Arg Thr Ile Phe Tyr Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala
    450   455   460
Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys
465   470   475   480
Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Met Glu
            485   490   495
Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Pro Lys
            500   505   510
Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Lys Asp Gly
        515   520   525
Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp
    530   535   540
Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala
545   550   555   560
Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Ile Leu Leu Glu
            565   570   575
Phe Val Thr Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr Lys
        580   585   590
Pro Gln Glu
        595

<210> 70

<211> 2181

<212> DNA

<213> Artificial Sequence

81

<400> 70

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atg agc gac gtg gct att gtg aag gag ggt tgg ctg cac aaa cga ggg        48
Met Ser Asp Val Ala Ile Val Lys Glu Gly Trp Leu His Lys Arg Gly
1               5                   10                  15
gag tac atc aag acc tgg cgg cca cgc tac ttc ctc ctc aag aat gat        96
Glu Tyr Ile Lys Thr Trp Arg Pro Arg Tyr Phe Leu Leu Lys Asn Asp
            20                  25                  30
ggc acc ttc att ggc tac aag gag cgg ccg cag gat gtg gac caa cgt       144
Gly Thr Phe Ile Gly Tyr Lys Glu Arg Pro Gln Asp Val Asp Gln Arg
        35                  40                  45
gag gct ccc ctc aac aac ttc tct gtg gcg cag tgc cag ctg atg aag       192
Glu Ala Pro Leu Asn Asn Phe Ser Val Ala Gln Cys Gln Leu Met Lys
    50                  55                  60
acg gag cgg ccc cgg ccc aac acc ttc atc atc cgc tgc ctg cag tgg       240
Thr Glu Arg Pro Arg Pro Asn Thr Phe Ile Ile Arg Cys Leu Gln Trp
65                  70                  75                  80
acc act gtc atc gaa cgc acc ttc cat gtg gag act cct gag gag cgg       288
Thr Thr Val Ile Glu Arg Thr Phe His Val Glu Thr Pro Glu Glu Arg
                85                  90                  95
gag gag tgg aca acc gcc atc cag act gtg gct gac ggc ctc aag aag       336
Glu Glu Trp Thr Thr Ala Ile Gln Thr Val Ala Asp Gly Leu Lys Lys
            100                 105                 110
cag gag gag gag gag atg gac ttc cgg tcg ggc tca ccc agt gac aac       384
Gln Glu Glu Glu Glu Met Asp Phe Arg Ser Gly Ser Pro Ser Asp Asn
        115                 120                 125
tca ggg gct gaa gag atg gag gtg tcc ctg gcc aag ccc aag cac cgc       432
Ser Gly Ala Glu Glu Met Glu Val Ser Leu Ala Lys Pro Lys His Arg
    130                 135                 140
gtg acc atg aac gag ttt gag tac ctg aag ctg ctg ggc aag ggc act       480
Val Thr Met Asn Glu Phe Glu Tyr Leu Lys Leu Leu Gly Lys Gly Thr
145                 150                 155                 160
ttc ggc aag gtg atc ctg gtg aag gag aag gcc aca ggc cgc tac tac       528
Phe Gly Lys Val Ile Leu Val Lys Glu Lys Ala Thr Gly Arg Tyr Tyr
                165                 170                 175
gcc atg aag atc ctc aag aag gaa gtc atc gtg gcc aag gac gag gtg       576
Ala Met Lys Ile Leu Lys Lys Glu Val Ile Val Ala Lys Asp Glu Val
            180                 185                 190
gcc cac aca ctc acc gag aac cgc gtc ctg cag aac tcc agg cac ccc       624
Ala His Thr Leu Thr Glu Asn Arg Val Leu Gln Asn Ser Arg His Pro
        195                 200               ·  205
ttc ctc aca gcc ctg aag tac tct ttc cag acc cac gac cgc ctc tgc       672
Phe Leu Thr Ala Leu Lys Tyr Ser Phe Gln Thr His Asp Arg Leu Cys
    210                 215                 220
ttt gtc atg gag tac gcc aac ggg ggc gag ctg ttc ttc cac ctg tcc       720
Phe Val Met Glu Tyr Ala Asn Gly Gly Glu Leu Phe Phe His Leu Ser
225                 230                 235                 240
cgg gaa cgt gtg ttc tcc gag gac cgg gcc cgc ttc tat ggc gct gag       768
Arg Glu Arg Val Phe Ser Glu Asp Arg Ala Arg Phe Tyr Gly Ala Glu
                245                 250                 255
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att gtg tca gcc ctg gac tac ctg cac tcg gag aag aac gtg gtg tac          816
Ile Val Ser Ala Leu Asp Tyr Leu His Ser Glu Lys Asn Val Val Tyr
            260                 265                 270
cgg gac ctc aag ctg gag aac ctc atg ctg gac aag gac ggg cac att          864
Arg Asp Leu Lys Leu Glu Asn Leu Met Leu Asp Lys Asp Gly His Ile
        275                 280                 285
aag atc aca gac ttc ggg ctg tgc aag gag ggg atc aag gac ggt gcc          912
Lys Ile Thr Asp Phe Gly Leu Cys Lys Glu Gly Ile Lys Asp Gly Ala
        290                 295                 300
acc atg aag acc ttt tgc ggc aca cct gag tac ctg gcc ccc gag gtg          960
Thr Met Lys Thr Phe Cys Gly Thr Pro Glu Tyr Leu Ala Pro Glu Val
305                 310                 315                 320
ctg gag gac aat gac tac ggc cgt gca gtg gac tgg tgg ggg ctg ggc         1008
Leu Glu Asp Asn Asp Tyr Gly Arg Ala Val Asp Trp Trp Gly Leu Gly
            325                 330                 335
gtg gtc atg tac gag atg atg tgc ggt cgc ctg ccc ttc tac aac cag         1056
Val Val Met Tyr Glu Met Met Cys Gly Arg Leu Pro Phe Tyr Asn Gln
            340                 345                 350
gac cat gag aag ctt ttt gag ctc atc ctc atg gag gag atc cgc ttc         1104
Asp His Glu Lys Leu Phe Glu Leu Ile Leu Met Glu Glu Ile Arg Phe
        355                 360                 365
ccg cgc acg ctt ggt ccc gag gcc aag tcc ttg ctt tca ggg ctg ctc         1152
Pro Arg Thr Leu Gly Pro Glu Ala Lys Ser Leu Leu Ser Gly Leu Leu
        370                 375                 380
aag aag gac ccc aag cag agg ctt ggc ggg ggc tcc gag gac gcc aag         1200
Lys Lys Asp Pro Lys Gln Arg Leu Gly Gly Gly Ser Glu Asp Ala Lys
385                 390                 395                 400
gag atc atg cag cat cgc ttc ttt gcc ggt atc gtg tgg cag cac gtg         1248
Glu Ile Met Gln His Arg Phe Phe Ala Gly Ile Val Trp Gln His Val
            405                 410                 415
tac gag aag aag ctc agc cca ccc ttc aag ccc cag gtc acg tcg gag         1296
Tyr Glu Lys Lys Leu Ser Pro Pro Phe Lys Pro Gln Val Thr Ser Glu
            420                 425                 430
act gac acc agg tat ttt gat gag gag ttc acg gcc cag atg atc acc         1344
Thr Asp Thr Arg Tyr Phe Asp Glu Glu Phe Thr Ala Gln Met Ile Thr
            435                 440                 445
atc aca cca cct gac caa gat gac agc atg gag tgt gtg gac agc gag         1392
Ile Thr Pro Pro Asp Gln Asp Asp Ser Met Glu Cys Val Asp Ser Glu
        450                 455                 460
cgc agg ccc cac ttc ccc cag ttc tcc tac tcg gcc agc agc acg gcc         1440
Arg Arg Pro His Phe Pro Gln Phe Ser Tyr Ser Ala Ser Ser Thr Ala
465                 470                 475                 480
tcg gat cca ccg gtc gcc acc atg gtg agc aag ggc gag gag ctg ttc         1488
Ser Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe
            485                 490                 495
acc ggg gtg gtg ccc atc ctg gtc gag ctg gac ggc gac gta aac ggc         1536
Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly
            500                 505                 510
cac aag ttc agc gtg tcc ggc gag ggc gag ggc gat gcc acc tac ggc         1584
His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly
            515                 520                 525
aag ctg acc ctg aag ttc atc tgc acc acc ggc aag ctg ccc gtg ccc         1632
Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro
            530                 535                 540
tgg ccc acc ctc gtg acc acc ctg acc tac ggc gtg cag tgc ttc agc         1680
Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser
545                 550                 555                 560
cgc tac ccc gac cac atg aag cag cac gac ttc ttc aag tcc gcc atg         1728
Arg Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met
            565                 570                 575
ccc gaa ggc tac gtc cag gag cgc acc atc ttc ttc aag gac gac ggc         1776
Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly
            580                 585                 590
```

83

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aac tac aag acc cgc gcc gag gtg aag ttc gag ggc gac acc ctg gtg        1824
Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val
        595                     600                 605
aac cgc atc gag ctg aag ggc atc gac ttc aag gag gac ggc aac atc        1872
Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile
        610                     615                 620
ctg ggg cac aag ctg gag tac aac tac aac agc cac aac gtc tat atc        1920
Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile
625                     630                 635                 640
atg gcc gac aag cag aag aac ggc atc aag gtg aac ttc aag atc cgc        1968
Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg
                645                 650                 655
cac aac atc gag gac ggc agc gtg cag ctc gcc gac cac tac cag cag        2016
His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln
                660                 665                 670
aac acc ccc atc ggc gac ggc ccc gtg ctg ctg ccc gac aac cac tac        2064
Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr
                675                 680             685
ctg agc acc cag tcc gcc ctg agc aaa gac ccc aac gag aag cgc gat        2112
Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp
        690                 695                 700
cac atg gtc ctg ctg gag ttc gtg acc gcc gcc ggg atc act ctc ggc        2160
His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly
705                 710                 715                 720
atg gac gag ctg tac aag taa                                            2181
Met Asp Glu Leu Tyr Lys
                725
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<210> 71

<211> 726

<212> PRT

<213> Artificial Sequence

<220>

<223> PKB-EGFP fusion

<400> 71
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Met Ser Asp Val Ala Ile Val Lys Glu Gly Trp Leu His Lys Arg Gly
1               5               10                  15
Glu Tyr Ile Lys Thr Trp Arg Pro Arg Tyr Phe Leu Leu Lys Asn Asp
            20                  25                  30
Gly Thr Phe Ile Gly Tyr Lys Glu Arg Pro Gln Asp Val Asp Gln Arg
            35                  40                  45
Glu Ala Pro Leu Asn Asn Phe Ser Val Ala Gln Cys Gln Leu Met Lys
        50                  55                  60
Thr Glu Arg Pro Arg Pro Asn Thr Phe Ile Ile Arg Cys Leu Gln Trp
65                  70                  75                  80
Thr Thr Val Ile Glu Arg Thr Phe His Val Glu Thr Pro Glu Glu Arg
                85                  90                  95
Glu Glu Trp Thr Thr Ala Ile Gln Thr Val Ala Asp Gly Leu Lys Lys
            100                 105                 110
Gln Glu Glu Glu Glu Met Asp Phe Arg Ser Gly Ser Pro Ser Asp Asn
        115                 120                 125
Ser Gly Ala Glu Glu Met Glu Val Ser Leu Ala Lys Pro Lys His Arg
        130                 135                 140
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84

Val Thr Met Asn Glu Phe Glu Tyr Leu Lys Leu Leu Gly Lys Gly Thr
145   150   155   160
Phe Gly Lys Val Ile Leu Val Lys Glu Lys Ala Thr Gly Arg Tyr Tyr
                165   170   175
Ala Met Lys Ile Leu Lys Lys Glu Val Ile Val Ala Lys Asp Glu Val
            180   185   190
Ala His Thr Leu Thr Glu Asn Arg Val Leu Gln Asn Ser Arg His Pro
        195   200   205
Phe Leu Thr Ala Leu Lys Tyr Ser Phe Gln Thr His Asp Arg Leu Cys
    210   215   220
Phe Val Met Glu Tyr Ala Asn Gly Gly Glu Leu Phe Phe His Leu Ser
225   230   235   240
Arg Glu Arg Val Phe Ser Glu Asp Arg Ala Arg Phe Tyr Gly Ala Glu
                245   250   255
Ile Val Ser Ala Leu Asp Tyr Leu His Ser Glu Lys Asn Val Val Tyr
                260   265   270
Arg Asp Leu Lys Leu Glu Asn Leu Met Leu Asp Lys Asp Gly His Ile
        275   280   285
Lys Ile Thr Asp Phe Gly Leu Cys Lys Glu Gly Ile Lys Asp Gly Ala
    290   295   300
Thr Met Lys Thr Phe Cys Gly Thr Pro Glu Tyr Leu Ala Pro Glu Val
305   310   315   320
Leu Glu Asp Asn Asp Tyr Gly Arg Ala Val Asp Trp Trp Gly Leu Gly
                325   330   335
Val Val Met Tyr Glu Met Met Cys Gly Arg Leu Pro Phe Tyr Asn Gln
                340   345   350
Asp His Glu Lys Leu Phe Glu Leu Ile Leu Met Glu Glu Ile Arg Phe
        355   360   365
Pro Arg Thr Leu Gly Pro Glu Ala Lys Ser Leu Leu Ser Gly Leu Leu
    370   375   380
Lys Lys Asp Pro Lys Gln Arg Leu Gly Gly Gly Ser Glu Asp Ala Lys
385   390   395   400
Glu Ile Met Gln His Arg Phe Phe Ala Gly Ile Val Trp Gln His Val
            405   410   415
Tyr Glu Lys Lys Leu Ser Pro Pro Phe Lys Pro Gln Val Thr Ser Glu
        420   425   430
Thr Asp Thr Arg Tyr Phe Asp Glu Glu Phe Thr Ala Gln Met Ile Thr
        435   440   445
Ile Thr Pro Pro Asp Gln Asp Asp Ser Met Glu Cys Val Asp Ser Glu
    450   455   460
Arg Arg Pro His Phe Pro Gln Phe Ser Tyr Ser Ala Ser Ser Thr Ala
465   470   475   480
Ser Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe
                485   490   495
Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly
                500   505   510
His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly
        515   520   525
Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro
    530   535   540
Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser
545   550   555   560
Arg Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met
                565   570   575
Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly
            580   585   590
Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val
        595   600   605
Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile
        610   615   620
Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile
625   630   635   640
Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg

```
                      645                    650                    655
His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln
                 660                    665                    670
Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr
            675                    680                    685
Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp
        690                    695                    700
His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly
705                    710                    715                    720
Met Asp Glu Leu Tyr Lys
                 725
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<210> 72

<211> 2751

<212> DNA

<213> Artificial Sequence

<220>

<223> Fusion construct

<220>

<221> CDS

<222> (1)..(2748)


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<400>  72
atg gct gac gtt tac ccg gcc aac gac tcc acg gcg tct cag gac gtg      48
Met Ala Asp Val Tyr Pro Ala Asn Asp Ser Thr Ala Ser Gln Asp Val
1               5                  10                  15
gcc aac cgc ttc gcc cgc aaa ggg gcg ctg agg cag aag aac gtg cat      96
Ala Asn Arg Phe Ala Arg Lys Gly Ala Leu Arg Gln Lys Asn Val His
                20                  25                  30
gag gtg aaa gac cac aaa ttc atc gcc cgc ttc ttc aag caa ccc acc     144
Glu Val Lys Asp His Lys Phe Ile Ala Arg Phe Phe Lys Gln Pro Thr
            35                  40                  45
ttc tgc agc cac tgc acc gac ttc atc tgg ggg ttt ggg aaa caa ggc     192
Phe Cys Ser His Cys Thr Asp Phe Ile Trp Gly Phe Gly Lys Gln Gly
        50                  55                  60
ttc cag tgc caa gtt tgc tgt ttt gtg gtt cat aag agg tgc cat gag     240
Phe Gln Cys Gln Val Cys Cys Phe Val Val His Lys Arg Cys His Glu
65                  70                  75                  80
ttc gtt acg ttc tct tgt ccg ggt gcg gat aag gga cct gac act gac     288
Phe Val Thr Phe Ser Cys Pro Gly Ala Asp Lys Gly Pro Asp Thr Asp
                85                  90                  95
gac ccc agg agc aag cac aag ttc aaa atc cac aca tac gga agc cct     336
Asp Pro Arg Ser Lys His Lys Phe Lys Ile His Thr Tyr Gly Ser Pro
                100                 105                 110
acc ttc tgt gat cac tgt ggg tcc ctg ctc tat gga ctt atc cac caa     384
Thr Phe Cys Asp His Cys Gly Ser Leu Leu Tyr Gly Leu Ile His Gln
            115                 120                 125
ggg atg aaa tgt gac acc tgc gac atg aat gtt cac aac cag tgt gtg     432
Gly Met Lys Cys Asp Thr Cys Asp Met Asn Val His Asn Gln Cys Val
        130                 135                 140
```

86

```
atc aat gac cct agc ctc tgc gga atg gat cac aca gag aag agg ggg      480
Ile Asn Asp Pro Ser Leu Cys Gly Met Asp His Thr Glu Lys Arg Gly
145                 150                 155                 160
cgg att tat ctg aag gct gag gtc act gat gaa aag ctc cac gtc acg      528
Arg Ile Tyr Leu Lys Ala Glu Val Thr Asp Glu Lys Leu His Val Thr
                165                 170                 175
gta cga gat gca aaa aat cta atc cct atg gat cca aat ggg ctt tcg      576
Val Arg Asp Ala Lys Asn Leu Ile Pro Met Asp Pro Asn Gly Leu Ser
            180                 185                 190
gat cct tat gtg aag ctg aaa cta atc cct gac ccc aag aat gag agc      624
Asp Pro Tyr Val Lys Leu Lys Leu Ile Pro Asp Pro Lys Asn Glu Ser
        195                 200                 205
aaa cag aaa acc aaa acc atc cgc tcc aac ctg aat cct cag tgg aat      672
Lys Gln Lys Thr Lys Thr Ile Arg Ser Asn Leu Asn Pro Gln Trp Asn
    210                 215                 220
gag tcc ttc acg ttc aaa tta aaa cct tca gac aaa gac cgg cga ctg      720
Glu Ser Phe Thr Phe Lys Leu Lys Pro Ser Asp Lys Asp Arg Arg Leu
225                 230                 235                 240
tct gta gaa atc tgg gac tgg gat cgg acg act cgg aat gac ttc atg      768
Ser Val Glu Ile Trp Asp Trp Asp Arg Thr Thr Arg Asn Asp Phe Met
                245                 250                 255
gga tcc ctt tcc ttt ggt gtc tca gag cta atg aag atg ccg gcc agt      816
Gly Ser Leu Ser Phe Gly Val Ser Glu Leu Met Lys Met Pro Ala Ser
            260                 265                 270
gga tgg tat aaa gct cac aac caa gaa gag ggc gaa tat tac aac gtg      864
Gly Trp Tyr Lys Ala His Asn Gln Glu Glu Gly Glu Tyr Tyr Asn Val
        275                 280                 285
ccc att cca gaa gga gat gaa gaa ggc aac atg gaa ctc agg cag aag      912
Pro Ile Pro Glu Gly Asp Glu Glu Gly Asn Met Glu Leu Arg Gln Lys
    290                 295                 300
ttt gag aaa gcc aag cta ggt cct gtt ggt aac aaa gtc atc agc cct      960
Phe Glu Lys Ala Lys Leu Gly Pro Val Gly Asn Lys Val Ile Ser Pro
305                 310                 315                 320
tca gaa gac aga aag caa cca tcc aac aac ctg gac aga gtg aaa ctc     1008
Ser Glu Asp Arg Lys Gln Pro Ser Asn Asn Leu Asp Arg Val Lys Leu
                325                 330                 335
aca gac ttc aac ttc ctc atg gtg ctg ggg aag ggg agt ttt ggg aag     1056
Thr Asp Phe Asn Phe Leu Met Val Leu Gly Lys Gly Ser Phe Gly Lys
            340                 345                 350
gtg atg ctt gct gac agg aag gga acg gag gaa ctg tac gcc atc aag     1104
Val Met Leu Ala Asp Arg Lys Gly Thr Glu Glu Leu Tyr Ala Ile Lys
        355                 360                 365
atc ctg aag aag gac gtg gtg atc cag gac gac gac gtg gag tgc acc     1152
Ile Leu Lys Lys Asp Val Val Ile Gln Asp Asp Asp Val Glu Cys Thr
    370                 375                 380
atg gtg gag aag cgc gtg ctg gcc ctg ctg gac aag ccg cca ttt ctg     1200
Met Val Glu Lys Arg Val Leu Ala Leu Leu Asp Lys Pro Pro Phe Leu
385                 390                 395                 400
aca cag ctg cac tcc tgc ttc cag aca gtg gac cgg ctg tac ttc gtc     1248
Thr Gln Leu His Ser Cys Phe Gln Thr Val Asp Arg Leu Tyr Phe Val
                405                 410                 415
atg gaa tac gtc aac ggc ggg gat ctt atg tac cac att cag caa gtc     1296
Met Glu Tyr Val Asn Gly Gly Asp Leu Met Tyr His Ile Gln Gln Val
            420                 425                 430
ggg aaa ttt aag gag cca caa gca gta ttc tac gca gcc gag atc tcc     1344
Gly Lys Phe Lys Glu Pro Gln Ala Val Phe Tyr Ala Ala Glu Ile Ser
        435                 440                 445
atc gga ctg ttc ttc ctt cat aaa aga ggg atc att tac agg gat ctg     1392
Ile Gly Leu Phe Phe Leu His Lys Arg Gly Ile Ile Tyr Arg Asp Leu
    450                 455                 460
aag ctg aac aat gtc atg ctg aac tca gaa ggg cac atc aaa atc gcc     1440
Lys Leu Asn Asn Val Met Leu Asn Ser Glu Gly His Ile Lys Ile Ala
465                 470                 475                 480
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87

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gac ttc ggg atg tgc aag gaa cac atg atg gat gga gtc acg acc agg    1488
Asp Phe Gly Met Cys Lys Glu His Met Met Asp Gly Val Thr Thr Arg
                485                     490                 495
acc ttc tgc gga act ccg gac tac att gcc cca gag ata atc gct tac    1536
Thr Phe Cys Gly Thr Pro Asp Tyr Ile Ala Pro Glu Ile Ile Ala Tyr
                500                     505                 510
cag ccg tac ggg aag tct gta gat tgg tgg gcg tac ggt gtg ctg ctg    1584
Gln Pro Tyr Gly Lys Ser Val Asp Trp Trp Ala Tyr Gly Val Leu Leu
                515                     520                 525
tac gag atg cta gcc ggg cag cct ccg ttt gat ggt gaa gat gaa gat    1632
Tyr Glu Met Leu Ala Gly Gln Pro Pro Phe Asp Gly Glu Asp Glu Asp
        530                     535                 540
gaa ctg ttt cag tct ata atg gag cac aac gtg tcc tac ccc aaa tcc    1680
Glu Leu Phe Gln Ser Ile Met Glu His Asn Val Ser Tyr Pro Lys Ser
545                     550                 555                 560
ttg tcc aag gaa gcc gtc tcc atc tgc aaa gga ctt atg acc aaa cag    1728
Leu Ser Lys Glu Ala Val Ser Ile Cys Lys Gly Leu Met Thr Lys Gln
                565                     570                 575
cct gcc aag cga ctg ggc tgc ggg ccc gag gga gag agg gat gtc aga    1776
Pro Ala Lys Arg Leu Gly Cys Gly Pro Glu Gly Glu Arg Asp Val Arg
        580                     585                 590
gag cat gcc ttc ttc agg agg atc gac tgg gag aaa ctg gag aac agg    1824
Glu His Ala Phe Phe Arg Arg Ile Asp Trp Glu Lys Leu Glu Asn Arg
        595                     600                 605
gag atc caa cca cca ttc aag ccc aaa gtg tgt ggc aaa gga gca gaa    1872
Glu Ile Gln Pro Pro Phe Lys Pro Lys Val Cys Gly Lys Gly Ala Glu
        610                     615                 620
aac ttt gac aag ttc ttc acg cga gga cag cct gtc tta aca cca cca    1920
Asn Phe Asp Lys Phe Phe Thr Arg Gly Gln Pro Val Leu Thr Pro Pro
625                     630                 635                 640
gat cag ctg gtc att gct aac ata gac caa tct gat ttt gaa ggg ttc    1968
Asp Gln Leu Val Ile Ala Asn Ile Asp Gln Ser Asp Phe Glu Gly Phe
                645                     650                 655
tcg tat gtc aac ccc cag ttt gtg cac cca atc ttg caa agt gca gta    2016
Ser Tyr Val Asn Pro Gln Phe Val His Pro Ile Leu Gln Ser Ala Val
                660                     665                 670
ggg cgc gcc atg agt aaa gga gaa gaa ctt ttc act gga gtt gtc cca    2064
Gly Arg Ala Met Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro
        675                     680                 685
att ctt gtt gaa tta gat ggc gat gtt aat ggg caa aaa ttc tct gtt    2112
Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly Gln Lys Phe Ser Val
        690                     695                 700
agt gga gag ggt gaa ggt gat gca aca tac gga aaa ctt acc ctt aaa    2160
Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys
705                     710                 715                 720
ttt att tgc act act ggg aag cta cct gtt cca tgg cca acg ctt gtc    2208
Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val
                725                     730                 735
act act ctc act tat ggt gtt caa tgc ttt tct aga tac cca gat cat    2256
Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His
                740                     745                 750
atg aaa cag cat gac ttt ttc aag agt gcc atg ccc gaa ggt tat gta    2304
Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val
                755                     760                 765
cag gaa aga act ata ttt tac aaa gat gac ggg aac tac aag aca cgt    2352
Gln Glu Arg Thr Ile Phe Tyr Lys Asp Asp Gly Asn Tyr Lys Thr Arg
        770                     775                 780
gct gaa gtc aag ttt gaa ggt gat acc ctt gtt aat aga atc gag tta    2400
Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu
785                     790                 795                 800
aaa ggt att gat ttt aaa gaa gat gga aac att ctt gga cac aaa atg    2448
Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Met
                805                     810                 815
```

88

```
gaa tac aat tat aac tca cat aat gta tac atc atg gca gac aaa cca          2496
Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Pro
            820                     825                 830
aag aat ggc atc aaa gtt aac ttc aaa att aga cac aac att aaa gat          2544
Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Lys Asp
        835                     840                 845
gga agc gtt caa tta gca gac cat tat caa caa aat act cca att ggc          2592
Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly
        850                     855                 860
gat ggc cct gtc ctt tta cca gac aac cat tac ctg tcc acg caa tct          2640
Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser
865                     870                 875                 880
gcc ctt tcc aaa gat ccc aac gaa aag aga gat cac atg atc ctt ctt          2688
Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Ile Leu Leu
                    885                 890                 895
gag ttt gta aca gct gct ggg att aca cat ggc atg gat gaa cta tac          2736
Glu Phe Val Thr Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr
            900                     905                 910
                                                                          2751
aaa cct cag gag taa
Lys Pro Gln Glu
            915


<210>   73

<211>   916

<212>   PRT

<213>   Artificial Sequence


<220>

<223>   Fusion construct


<400>   73
Met Ala Asp Val Tyr Pro Ala Asn Asp Ser Thr Ala Ser Gln Asp Val
1               5                   10                  15
Ala Asn Arg Phe Ala Arg Lys Gly Ala Leu Arg Gln Lys Asn Val His
            20                  25                  30
Glu Val Lys Asp His Lys Phe Ile Ala Arg Phe Phe Lys Gln Pro Thr
            35                  40                  45
Phe Cys Ser His Cys Thr Asp Phe Ile Trp Gly Phe Gly Lys Gln Gly
    50                  55                  60
Phe Gln Cys Gln Val Cys Cys Phe Val Val His Lys Arg Cys His Glu
65                  70                  75                  80
Phe Val Thr Phe Ser Cys Pro Gly Ala Asp Lys Gly Pro Asp Thr Asp
                85                  90                  95
Asp Pro Arg Ser Lys His Lys Phe Lys Ile His Thr Tyr Gly Ser Pro
            100                 105                 110
Thr Phe Cys Asp His Cys Gly Ser Leu Leu Tyr Gly Leu Ile His Gln
        115                 120                 125
Gly Met Lys Cys Asp Thr Cys Asp Met Asn Val His Asn Gln Cys Val
        130                 135                 140
Ile Asn Asp Pro Ser Leu Cys Gly Met Asp His Thr Glu Lys Arg Gly
145                 150                 155                 160
Arg Ile Tyr Leu Lys Ala Glu Val Thr Asp Glu Lys Leu His Val Thr
                165                 170                 175
Val Arg Asp Ala Lys Asn Leu Ile Pro Met Asp Pro Asn Gly Leu Ser
            180                 185                 190
Asp Pro Tyr Val Lys Leu Lys Leu Ile Pro Asp Pro Lys Asn Glu Ser
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89

```
                195                    200                    205
Lys Gln Lys Thr Lys Thr Ile Arg Ser Asn Leu Asn Pro Gln Trp Asn
    210                    215                    220
Glu Ser Phe Thr Phe Lys Leu Lys Pro Ser Asp Lys Asp Arg Arg Leu
225                    230                    235                    240
Ser Val Glu Ile Trp Asp Trp Asp Arg Thr Thr Arg Asn Asp Phe Met
                245                    250                    255
Gly Ser Leu Ser Phe Gly Val Ser Glu Leu Met Lys Met Pro Ala Ser
                260                    265                    270
Gly Trp Tyr Lys Ala His Asn Gln Glu Glu Gly Glu Tyr Tyr Asn Val
                275                    280                    285
Pro Ile Pro Glu Gly Asp Glu Glu Gly Asn Met Glu Leu Arg Gln Lys
                290                    295                    300
Phe Glu Lys Ala Lys Leu Gly Pro Val Gly Asn Lys Val Ile Ser Pro
305                    310                    315                    320
Ser Glu Asp Arg Lys Gln Pro Ser Asn Asn Leu Asp Arg Val Lys Leu
                325                    330                    335
Thr Asp Phe Asn Phe Leu Met Val Leu Gly Lys Gly Ser Phe Gly Lys
                340                    345                    350
Val Met Leu Ala Asp Arg Lys Gly Thr Glu Glu Leu Tyr Ala Ile Lys
                355                    360                    365
Ile Leu Lys Lys Asp Val Val Ile Gln Asp Asp Asp Val Glu Cys Thr
    370                    375                    380
Met Val Glu Lys Arg Val Leu Ala Leu Leu Asp Lys Pro Pro Phe Leu
385                    390                    395                    400
Thr Gln Leu His Ser Cys Phe Gln Thr Val Asp Arg Leu Tyr Phe Val
                405                    410                    415
Met Glu Tyr Val Asn Gly Gly Asp Leu Met Tyr His Ile Gln Gln Val
                420                    425                    430
Gly Lys Phe Lys Glu Pro Gln Ala Val Phe Tyr Ala Ala Glu Ile Ser
    435                    440                    445
Ile Gly Leu Phe Phe Leu His Lys Arg Gly Ile Ile Tyr Arg Asp Leu
    450                    455                    460
Lys Leu Asn Asn Val Met Leu Asn Ser Glu Gly His Ile Lys Ile Ala
465                    470                    475                    480
Asp Phe Gly Met Cys Lys Glu His Met Met Asp Gly Val Thr Thr Arg
                485                    490                    495
Thr Phe Cys Gly Thr Pro Asp Tyr Ile Ala Pro Glu Ile Ile Ala Tyr
                500                    505                    510
Gln Pro Tyr Gly Lys Ser Val Asp Trp Trp Ala Tyr Gly Val Leu Leu
    515                    520                    525
Tyr Glu Met Leu Ala Gly Gln Pro Pro Phe Asp Gly Glu Asp Glu Asp
    530                    535                    540
Glu Leu Phe Gln Ser Ile Met Glu His Asn Val Ser Tyr Pro Lys Ser
545                    550                    555                    560
Leu Ser Lys Glu Ala Val Ser Ile Cys Lys Gly Leu Met Thr Lys Gln
                565                    570                    575
Pro Ala Lys Arg Leu Gly Cys Gly Pro Glu Gly Glu Arg Asp Val Arg
    580                    585                    590
Glu His Ala Phe Phe Arg Arg Ile Asp Trp Glu Lys Leu Glu Asn Arg
    595                    600                    605
Glu Ile Gln Pro Pro Phe Lys Pro Lys Val Cys Gly Lys Gly Ala Glu
    610                    615                    620
Asn Phe Asp Lys Phe Phe Thr Arg Gly Gln Pro Val Leu Thr Pro Pro
625                    630                    635                    640
Asp Gln Leu Val Ile Ala Asn Ile Asp Gln Ser Asp Phe Glu Gly Phe
                645                    650                    655
Ser Tyr Val Asn Pro Gln Phe Val His Pro Ile Leu Gln Ser Ala Val
                660                    665                    670
Gly Arg Ala Met Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro
    675                    680                    685
Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly Gln Lys Phe Ser Val
    690                    695                    700
```

90

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Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys
705             710             715             720
Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val
            725             730             735
Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His
            740             745             750
Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val
        755             760             765
Gln Glu Arg Thr Ile Phe Tyr Lys Asp Asp Gly Asn Tyr Lys Thr Arg
    770             775             780
Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu
785             790             795             800
Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Met
            805             810             815
Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Pro
        820             825             830
Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Lys Asp
        835             840             845
Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly
    850             855             860
Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser
865             870             875             880
Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Ile Leu Leu
            885             890             895
Glu Phe Val Thr Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr
            900             905             910
Lys Pro Gln Glu
        915
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<210>   74

<211>   2157

<212>   DNA

<213>   Artificial Sequence



<220>

<223>   Smad2-EGFP fusion

<220>

<221>   CDS

<222>   (1)..(2154)


<400>   74
atg tcg tcc atc ttg cca ttc acg ccg cca gtt gtg aag aga ctg ctg        48
Met Ser Ser Ile Leu Pro Phe Thr Pro Pro Val Val Lys Arg Leu Leu
1               5               10              15
gga tgg aag aag tca gct ggt ggg tct gga gga gca ggc gga gga gag        96
Gly Trp Lys Lys Ser Ala Gly Gly Ser Gly Gly Ala Gly Gly Gly Glu
            20              25              30
cag aat ggg cag gaa gaa aag tgg tgt gag aaa gca gtg aaa agt ctg        144
Gln Asn Gly Gln Glu Glu Lys Trp Cys Glu Lys Ala Val Lys Ser Leu
        35              40              45
gtg aag aag cta aag aaa aca gga cga tta gat gag ctt gag aaa gcc        192
```

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                                              Val Lys Lys Leu Lys Lys Thr Gly Arg Leu Asp Glu Leu Glu Lys Ala
                                                  50                  55                  60
atc acc act caa aac tgt aat act aaa tgt gtt acc ata cca agc act      240
Ile Thr Thr Gln Asn Cys Asn Thr Lys Cys Val Thr Ile Pro Ser Thr
65                  70                  75                  80
tgc tct gaa att tgg gga ctg agt aca cca aat acg ata gat cag tgg      288
Cys Ser Glu Ile Trp Gly Leu Ser Thr Pro Asn Thr Ile Asp Gln Trp
                    85                  90                  95
gat aca aca ggc ctt tac agc ttc tct gaa caa acc agg tct ctt gat      336
Asp Thr Thr Gly Leu Tyr Ser Phe Ser Glu Gln Thr Arg Ser Leu Asp
                    100                 105                 110
ggt cgt ctc cag gta tcc cat cga aaa gga ttg cca cat gtt ata tat      384
Gly Arg Leu Gln Val Ser His Arg Lys Gly Leu Pro His Val Ile Tyr
                115                 120                 125
tgc cga tta tgg cgc tgg cct gat ctt cac agt cat cat gaa ctc aag      432
Cys Arg Leu Trp Arg Trp Pro Asp Leu His Ser His His Glu Leu Lys
            130                 135                 140
gca att gaa aac tgc gaa tat gct ttt aat ctt aaa aag gat gaa gta      480
Ala Ile Glu Asn Cys Glu Tyr Ala Phe Asn Leu Lys Lys Asp Glu Val
145                 150                 155                 160
tgt gta aac cct tac cac tat cag aga gtt gag aca cca gtt ttg cct      528
Cys Val Asn Pro Tyr His Tyr Gln Arg Val Glu Thr Pro Val Leu Pro
                165                 170                 175
cca gta tta gtg ccc cga cac acc gag atc cta aca gaa ctt ccg cct      576
Pro Val Leu Val Pro Arg His Thr Glu Ile Leu Thr Glu Leu Pro Pro
                180                 185                 190
ctg gat gac tat act cac tcc att cca gaa aac act aac ttc cca gca      624
Leu Asp Asp Tyr Thr His Ser Ile Pro Glu Asn Thr Asn Phe Pro Ala
                195                 200                 205
gga att gag cca cag agt aat tat att cca gaa acg cca cct cct gga      672
Gly Ile Glu Pro Gln Ser Asn Tyr Ile Pro Glu Thr Pro Pro Pro Gly
                210                 215                 220
tat atc agt gaa gat gga gaa aca agt gac caa cag ttg aat caa agt      720
Tyr Ile Ser Glu Asp Gly Glu Thr Ser Asp Gln Gln Leu Asn Gln Ser
225                 230                 235                 240
atg gac aca ggc tct cca gca gaa cta tct cct act act ctt tcc cct      768
Met Asp Thr Gly Ser Pro Ala Glu Leu Ser Pro Thr Thr Leu Ser Pro
                245                 250                 255
gtt aat cat agc ttg gat tta cag cca gtt act tac tca gaa cct gca      816
Val Asn His Ser Leu Asp Leu Gln Pro Val Thr Tyr Ser Glu Pro Ala
                260                 265                 270
ttt tgg tgt tca ata gca tat tat gaa tta aat cag agg gtt gga gaa      864
Phe Trp Cys Ser Ile Ala Tyr Tyr Glu Leu Asn Gln Arg Val Gly Glu
            275                 280                 285
acc ttc cat gca tca cag ccc tca ctc act gta gat ggc ttt aca gac      912
Thr Phe His Ala Ser Gln Pro Ser Leu Thr Val Asp Gly Phe Thr Asp
        290                 295                 300
cca tca aat tca gag agg ttc tgc tta ggt tta ctc tcc aat gtt aac      960
Pro Ser Asn Ser Glu Arg Phe Cys Leu Gly Leu Leu Ser Asn Val Asn
305                 310                 315                 320
cga aat gcc acg gta gaa atg aca aga agg cat ata gga aga gga gtg      1008
Arg Asn Ala Thr Val Glu Met Thr Arg Arg His Ile Gly Arg Gly Val
                325                 330                 335
cgc tta tac tac ata ggt ggg gaa gtt ttt gct gag tgc cta agt gat      1056
Arg Leu Tyr Tyr Ile Gly Gly Glu Val Phe Ala Glu Cys Leu Ser Asp
                340                 345                 350
agt gca atc ttt gtg cag agc ccc aat tgt aat cag aga tat ggc tgg      1104
Ser Ala Ile Phe Val Gln Ser Pro Asn Cys·Asn Gln Arg Tyr Gly Trp
            355                 360                 365
cac cct gca aca gtg tgt aaa att cca cca ggc tgt aat ctg aag atc      1152
His Pro Ala Thr Val Cys Lys Ile Pro Pro Gly Cys Asn Leu Lys Ile
        370                 375                 380
ttc aac aac cag gaa ttt gct gct ctt ctg gct cag tct gtt aat cag      1200
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92

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Phe Asn Asn Gln Glu Phe Ala Ala Leu Leu Ala Gln Ser Val Asn Gln
385                 390                 395                 400
ggt ttt gaa gcc gtc tat cag cta act aga atg tgc acc ata aga atg      1248
Gly Phe Glu Ala Val Tyr Gln Leu Thr Arg Met Cys Thr Ile Arg Met
                405                 410                 415
agt ttt gtg aaa ggg tgg gga gca gaa tac cga agg cag acg gta aca      1296
Ser Phe Val Lys Gly Trp Gly Ala Glu Tyr Arg Arg Gln Thr Val Thr
                420                 425                 430
agt act cct tgc tgg att gaa ctt cat ctg aat gga cct cta cag tgg      1344
Ser Thr Pro Cys Trp Ile Glu Leu His Leu Asn Gly Pro Leu Gln Trp
            435                 440                 445
ttg gac aaa gta tta act cag atg gga tcc cct tca gtg cgt tgc tca      1392
Leu Asp Lys Val Leu Thr Gln Met Gly Ser Pro Ser Val Arg Cys Ser
        450                 455                 460
agc atg tca tgg gta ccg cgg gcc cgg gat cca ccg gtc gcc acc atg      1440
Ser Met Ser Trp Val Pro Arg Ala Arg Asp Pro Pro Val Ala Thr Met
465                 470                 475                 480
gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc      1488
Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val
                485                 490                 495
gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag      1536
Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu
                500                 505                 510
ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc      1584
Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys
            515                 520                 525
acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg      1632
Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu
            530                 535                 540
acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag      1680
Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln
545                 550                 555                 560
cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc      1728
His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg
                565                 570                 575
acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag gtg      1776
Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val
                580                 585                 590
aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc atc      1824
Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile
                595                 600                 605
gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac aac      1872
Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn
            610                 615                 620
tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac ggc      1920
Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly
625                 630                 635                 640
atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc gtg      1968
Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val
                645                 650                 655
cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc ccc      2016
Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro
                660                 665                 670
gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg agc      2064
Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser
            675                 680                 685
aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc gtg      2112
Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val
        690                 695                 700
acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag taa      2157
Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
705                 710                 715
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<210> 75

<211> 718

<212> PRT

<213> Artificial Sequence

<220>

<223> Smad2-EGFP fusion

<400> 75

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Met Ser Ser Ile Leu Pro Phe Thr Pro Pro Val Val Lys Arg Leu Leu
1               5                   10                  15
Gly Trp Lys Lys Ser Ala Gly Gly Ser Gly Gly Ala Gly Gly Gly Glu
            20                  25                  30
Gln Asn Gly Gln Glu Glu Lys Trp Cys Glu Lys Ala Val Lys Ser Leu
        35                  40                  45
Val Lys Lys Leu Lys Lys Thr Gly Arg Leu Asp Glu Leu Glu Lys Ala
    50                  55                  60
Ile Thr Thr Gln Asn Cys Asn Thr Lys Cys Val Thr Ile Pro Ser Thr
65                  70                  75                  80
Cys Ser Glu Ile Trp Gly Leu Ser Thr Pro Asn Thr Ile Asp Gln Trp
                85                  90                  95
Asp Thr Thr Gly Leu Tyr Ser Phe Ser Glu Gln Thr Arg Ser Leu Asp
            100                 105                 110
Gly Arg Leu Gln Val Ser His Arg Lys Gly Leu Pro His Val Ile Tyr
        115                 120                 125
Cys Arg Leu Trp Arg Trp Pro Asp Leu His Ser His His Glu Leu Lys
    130                 135                 140
Ala Ile Glu Asn Cys Glu Tyr Ala Phe Asn Leu Lys Lys Asp Glu Val
145                 150                 155                 160
Cys Val Asn Pro Tyr His Tyr Gln Arg Val Glu Thr Pro Val Leu Pro
                165                 170                 175
Pro Val Leu Val Pro Arg His Thr Glu Ile Leu Thr Glu Leu Pro Pro
            180                 185                 190
Leu Asp Asp Tyr Thr His Ser Ile Pro Glu Asn Thr Asn Phe Pro Ala
        195                 200                 205
Gly Ile Glu Pro Gln Ser Asn Tyr Ile Pro Glu Thr Pro Pro Pro Gly
    210                 215                 220
Tyr Ile Ser Glu Asp Gly Glu Thr Ser Asp Gln Gln Leu Asn Gln Ser
225                 230                 235                 240
Met Asp Thr Gly Ser Pro Ala Glu Leu Ser Pro Thr Thr Leu Ser Pro
                245                 250                 255
Val Asn His Ser Leu Asp Leu Gln Pro Val Thr Tyr Ser Glu Pro Ala
            260                 265                 270
Phe Trp Cys Ser Ile Ala Tyr Tyr Glu Leu Asn Gln Arg Val Gly Glu
        275                 280                 285
Thr Phe His Ala Ser Gln Pro Ser Leu Thr Val Asp Gly Phe Thr Asp
    290                 295                 300
Pro Ser Asn Ser Glu Arg Phe Cys Leu Gly Leu Leu Ser Asn Val Asn
305                 310                 315                 320
Arg Asn Ala Thr Val Glu Met Thr Arg Arg His Ile Gly Arg Gly Val
                325                 330                 335
Arg Leu Tyr Tyr Ile Gly Gly Glu Val Phe Ala Glu Cys Leu Ser Asp
            340                 345                 350
Ser Ala Ile Phe Val Gln Ser Pro Asn Cys Asn Gln Arg Tyr Gly Trp
        355                 360                 365
His Pro Ala Thr Val Cys Lys Ile Pro Pro Gly Cys Asn Leu Lys Ile
```

94

```
                 370                    375                    380
Phe Asn Asn Gln Glu Phe Ala Ala Leu Leu Ala Gln Ser Val Asn Gln
385                 390                    395                    400
Gly Phe Glu Ala Val Tyr Gln Leu Thr Arg Met Cys Thr Ile Arg Met
                405                    410                    415
Ser Phe Val Lys Gly Trp Gly Ala Glu Tyr Arg Arg Gln Thr Val Thr
                420                    425                    430
Ser Thr Pro Cys Trp Ile Glu Leu His Leu Asn Gly Pro Leu Gln Trp
            435                    440                    445
Leu Asp Lys Val Leu Thr Gln Met Gly Ser Pro Ser Val Arg Cys Ser
        450                    455                    460
Ser Met Ser Trp Val Pro Arg Ala Arg Asp Pro Pro Val Ala Thr Met
465                    470                    475                    480
Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val
                485                    490                    495
Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu
            500                    505                    510
Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys
        515                    520                    525
Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu
        530                    535                    540
Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln
545                    550                    555                    560
His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg
                565                    570                    575
Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val
                580                    585                    590
Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile
            595                    600                    605
Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn
        610                    615                    620
Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly
625                    630                    635                    640
Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val
                645                    650                    655
Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro
            660                    665                    670
Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser
        675                    680                    685
Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val
690                    695                    700
Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
705                    710                    715
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<210> 76

<211> 2397

<212> DNA

<213> Artificial Sequence

<220>

<223> Smad4-EGFP fusion

<220>

<221> CDS

95

<400> 76

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atg gac aat atg tct att acg aat aca cca aca agt aat gat gcc tgt      48
Met Asp Asn Met Ser Ile Thr Asn Thr Pro Thr Ser Asn Asp Ala Cys
1               5                  10                 15
ctg agc att gtg cat agt ttg atg tgc cat aga caa ggt gga gag agt      96
Leu Ser Ile Val His Ser Leu Met Cys His Arg Gln Gly Gly Glu Ser
            20                 25                 30
gaa aca ttt gca aaa aga gca att gaa agt ttg gta aag aag ctg aag     144
Glu Thr Phe Ala Lys Arg Ala Ile Glu Ser Leu Val Lys Lys Leu Lys
        35                 40                 45
gag aaa aaa gat gaa ttg gat tct tta ata aca gct ata act aca aat     192
Glu Lys Lys Asp Glu Leu Asp Ser Leu Ile Thr Ala Ile Thr Thr Asn
    50                 55                 60
gga gct cat cct agt aaa tgt gtt acc ata cag aga aca ttg gat ggg     240
Gly Ala His Pro Ser Lys Cys Val Thr Ile Gln Arg Thr Leu Asp Gly
65                 70                 75                 80
agg ctt cag gtg gct ggt cgg aaa gga ttt cct cat gtg atc tat gcc     288
Arg Leu Gln Val Ala Gly Arg Lys Gly Phe Pro His Val Ile Tyr Ala
                85                 90                 95
cgt ctc tgg agg tgg cct gat ctt cac aaa aat gaa cta aaa cat gtt     336
Arg Leu Trp Arg Trp Pro Asp Leu His Lys Asn Glu Leu Lys His Val
            100                105                110
aaa tat tgt cag tat gcg ttt gac tta aaa tgt gat agt gtc tgt gtg     384
Lys Tyr Cys Gln Tyr Ala Phe Asp Leu Lys Cys Asp Ser Val Cys Val
            115                120                125
aat cca tat cac tac gaa cga gtt gta tca cct gga att gat ctc tca     432
Asn Pro Tyr His Tyr Glu Arg Val Val Ser Pro Gly Ile Asp Leu Ser
        130                135                140
gga tta aca ctg cag agt aat gct cca tca agt atg atg gtg aag gat     480
Gly Leu Thr Leu Gln Ser Asn Ala Pro Ser Ser Met Met Val Lys Asp
145                150                155                160
gaa tat gtg cat gac ttt gag gga cag cca tcg ttg tcc act gaa gga     528
Glu Tyr Val His Asp Phe Glu Gly Gln Pro Ser Leu Ser Thr Glu Gly
                165                170                175
cat tca att caa acc atc cag cat cca cca agt aat cgt gca tcg aca     576
His Ser Ile Gln Thr Ile Gln His Pro Pro Ser Asn Arg Ala Ser Thr
            180                185                190
gag aca tac agc acc cca gct ctg tta gcc cca tct gag tct aat gct     624
Glu Thr Tyr Ser Thr Pro Ala Leu Leu Ala Pro Ser Glu Ser Asn Ala
        195                200                205
acc agc act gcc aac ttt ccc aac att cct gtg gct tcc aca agt cag     672
Thr Ser Thr Ala Asn Phe Pro Asn Ile Pro Val Ala Ser Thr Ser Gln
    210                215                220
cct gcc agt ata ctg ggg ggc agc cat agt gaa gga ctg ttg cag ata     720
Pro Ala Ser Ile Leu Gly Gly Ser His Ser Glu Gly Leu Leu Gln Ile
225                230                235                240
gca tca ggg cct cag cca gga cag cag cag aat gga ttt act ggt cag     768
Ala Ser Gly Pro Gln Pro Gly Gln Gln Gln Asn Gly Phe Thr Gly Gln
                245                250                255
cca gct act tac cat cat aac agc act acc acc tgg act gga agt agg     816
Pro Ala Thr Tyr His His Asn Ser Thr Thr Thr Trp Thr Gly Ser Arg
            260                265                270
act gca cca tac aca cct aat ttg cct cac cac caa aac ggc cat ctt     864
Thr Ala Pro Tyr Thr Pro Asn Leu Pro His His Gln Asn Gly His Leu
        275                280                285
cag cac cac ccg cct atg ccg ccc cat ccc gga cat tac tgg cct gtt     912
Gln His His Pro Pro Met Pro Pro His Pro Gly His Tyr Trp Pro Val
    290                295                300
cac aat gag ctt gca ttc cag cct ccc att tcc aat cat cct gct cct     960
```

96

```
His Asn Glu Leu Ala Phe Gln Pro Pro Ile Ser Asn His Pro Ala Pro
305             310             315             320
gag tat tgg tgt tcc att gct tac ttt gaa atg gat gtt cag gta gga      1008
Glu Tyr Trp Cys Ser Ile Ala Tyr Phe Glu Met Asp Val Gln Val Gly
                325             330             335
gag aca ttt aag gtt cct tca agc tgc cct att gtt act gtt gat gga      1056
Glu Thr Phe Lys Val Pro Ser Ser Cys Pro Ile Val Thr Val Asp Gly
            340             345             350
tac gtg gac cct tct gga gga gat cgc ttt tgt ttg ggt caa ctc tcc      1104
Tyr Val Asp Pro Ser Gly Gly Asp Arg Phe Cys Leu Gly Gln Leu Ser
            355             360             365
aat gtc cac agg aca gaa gcc att gag aga gca agg ttg cac ata ggc      1152
Asn Val His Arg Thr Glu Ala Ile Glu Arg Ala Arg Leu His Ile Gly
        370             375             380
aaa ggt gtg cag ttg gaa tgt aaa ggt gaa ggt gat gtt tgg gtc agg      1200
Lys Gly Val Gln Leu Glu Cys Lys Gly Glu Gly Asp Val Trp Val Arg
385             390             395             400
tgc ctt agt gac cac gcg gtc ttt gta cag agt tac tac tta gac aga      1248
Cys Leu Ser Asp His Ala Val Phe Val Gln Ser Tyr Tyr Leu Asp Arg
                405             410             415
gaa gct ggg cgt gca cct gga gat gct gtt cat aag atc tac cca agt      1296
Glu Ala Gly Arg Ala Pro Gly Asp Ala Val His Lys Ile Tyr Pro Ser
            420             425             430
gca tat ata aag gtc ttt gat ttg cgt cag tgt cat cga cag atg cag      1344
Ala Tyr Ile Lys Val Phe Asp Leu Arg Gln Cys His Arg Gln Met Gln
            435             440             445
cag cag gcg gct act gca caa gct gca gca gct gcc cag gca gca gcc      1392
Gln Gln Ala Ala Thr Ala Gln Ala Ala Ala Ala Ala Gln Ala Ala Ala
        450             455             460
gtg gca gga aac atc cct ggc cca gga tca gta ggt gga ata gct cca      1440
Val Ala Gly Asn Ile Pro Gly Pro Gly Ser Val Gly Gly Ile Ala Pro
465             470             475             480
gct atc agt ctg tca gct gct gct gga att ggt gtt gat gac ctt cgt      1488
Ala Ile Ser Leu Ser Ala Ala Ala Gly Ile Gly Val Asp Asp Leu Arg
                485             490             495
cgc tta tgc ata ctc agg atg agt ttt gtg aaa ggc tgg gga ccg gat      1536
Arg Leu Cys Ile Leu Arg Met Ser Phe Val Lys Gly Trp Gly Pro Asp
            500             505             510
tac cca aga cag agc atc aaa gaa aca cct tgc tgg att gaa att cac      1584
Tyr Pro Arg Gln Ser Ile Lys Glu Thr Pro Cys Trp Ile Glu Ile His
            515             520             525
tta cac cgg gcc ctc cag ctc cta gac gaa gta ctt cat acc atg ccg      1632
Leu His Arg Ala Leu Gln Leu Leu Asp Glu Val Leu His Thr Met Pro
        530             535             540
att gca gac cca caa cct tta gac tgg gat cca ccg gtc gcc acc atg      1680
Ile Ala Asp Pro Gln Pro Leu Asp Trp Asp Pro Pro Val Ala Thr Met
545             550             555             560
gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc      1728
Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val
                565             570             575
gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag      1776
Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu
            580             585             590
ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc      1824
Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys
            595             600             605
acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg      1872
Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu
        610             615             620
acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag      1920
Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln
625             630             635             640
cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc      1968
```

97

```
His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg
              645             650                 655
acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag gtg    2016
Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val
              660             665                 670
aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc atc    2064
Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile
      675                 680                 685
gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac aac    2112
Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn
      690                 695                 700
tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac ggc    2160
Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly
705                 710                 715                 720
atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc gtg    2208
Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val
                  725                 730                 735
cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc ccc    2256
Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro
              740                 745                 750
gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg agc    2304
Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser
              755                 760                 765
aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc gtg    2352
Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val
      770                 775                 780
acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag taa       2397
Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
785                 790                 795
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<210> 77

<211> 798

<212> PRT

<213> Artificial Sequence

<220>

<223> Smad4-EGFP fusion

<400> 77
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Met Asp Asn Met Ser Ile Thr Asn Thr Pro Thr Ser Asn Asp Ala Cys
1               5                   10                  15
Leu Ser Ile Val His Ser Leu Met Cys His Arg Gln Gly Gly Glu Ser
              20                  25                  30
Glu Thr Phe Ala Lys Arg Ala Ile Glu Ser Leu Val Lys Lys Leu Lys
      35                  40                  45
Glu Lys Lys Asp Glu Leu Asp Ser Leu Ile Thr Ala Ile Thr Thr Asn
      50                  55                  60
Gly Ala His Pro Ser Lys Cys Val Thr Ile Gln Arg Thr Leu Asp Gly
65                  70                  75                  80
Arg Leu Gln Val Ala Gly Arg Lys Gly Phe Pro His Val Ile Tyr Ala
                  85                  90                  95
Arg Leu Trp Arg Trp Pro Asp Leu His Lys Asn Glu Leu Lys His Val
              100                 105                 110
Lys Tyr Cys Gln Tyr Ala Phe Asp Leu Lys Cys Asp Ser Val Cys Val
              115                 120                 125
Asn Pro Tyr His Tyr Glu Arg Val Val Ser Pro Gly Ile Asp Leu Ser
```

```
          130                     135                     140
Gly Leu Thr Leu Gln Ser Asn Ala Pro Ser Ser Met Met Val Lys Asp
145                     150                     155                     160
Glu Tyr Val His Asp Phe Glu Gly Gln Pro Ser Leu Ser Thr Glu Gly
                165                     170                     175
His Ser Ile Gln Thr Ile Gln His Pro Pro Ser Asn Arg Ala Ser Thr
                180                     185                     190
Glu Thr Tyr Ser Thr Pro Ala Leu Leu Ala Pro Ser Glu Ser Asn Ala
                195                     200                     205
Thr Ser Thr Ala Asn Phe Pro Asn Ile Pro Val Ala Ser Thr Ser Gln
        210                     215                     220
Pro Ala Ser Ile Leu Gly Gly Ser His Ser Glu Gly Leu Leu Gln Ile
225                     230                     235                     240
Ala Ser Gly Pro Gln Pro Gly Gln Gln Gln Asn Gly Phe Thr Gly Gln
                245                     250                     255
Pro Ala Thr Tyr His His Asn Ser Thr Thr Thr Trp Thr Gly Ser Arg
                260                     265                     270
Thr Ala Pro Tyr Thr Pro Asn Leu Pro His His Gln Asn Gly His Leu
                275                     280                     285
Gln His His Pro Pro Met Pro Pro His Pro Gly His Tyr Trp Pro Val
        290                     295                     300
His Asn Glu Leu Ala Phe Gln Pro Pro Ile Ser Asn His Pro Ala Pro
305                     310                     315                     320
Glu Tyr Trp Cys Ser Ile Ala Tyr Phe Glu Met Asp Val Gln Val Gly
                325                     330                     335
Glu Thr Phe Lys Val Pro Ser Ser Cys Pro Ile Val Thr Val Asp Gly
                340                     345                     350
Tyr Val Asp Pro Ser Gly Gly Asp Arg Phe Cys Leu Gly Gln Leu Ser
                355                     360                     365
Asn Val His Arg Thr Glu Ala Ile Glu Arg Ala Arg Leu His Ile Gly
        370                     375                     380
Lys Gly Val Gln Leu Glu Cys Lys Gly Glu Gly Asp Val Trp Val Arg
385                     390                     395                     400
Cys Leu Ser Asp His Ala Val Phe Val Gln Ser Tyr Tyr Leu Asp Arg
                405                     410                     415
Glu Ala Gly Arg Ala Pro Gly Asp Ala Val His Lys Ile Tyr Pro Ser
                420                     425                     430
Ala Tyr Ile Lys Val Phe Asp Leu Arg Gln Cys His Arg Gln Met Gln
                435                     440                     445
Gln Gln Ala Ala Thr Ala Gln Ala Ala Ala Ala Gln Ala Ala Ala
        450                     455                     460
Val Ala Gly Asn Ile Pro Gly Pro Gly Ser Val Gly Gly Ile Ala Pro
465                     470                     475                     480
Ala Ile Ser Leu Ser Ala Ala Ala Gly Ile Gly Val Asp Asp Leu Arg
                485                     490                     495
Arg Leu Cys Ile Leu Arg Met Ser Phe Val Lys Gly Trp Gly Pro Asp
                500                     505                     510
Tyr Pro Arg Gln Ser Ile Lys Glu Thr Pro Cys Trp Ile Glu Ile His
        515                     520                     525
Leu His Arg Ala Leu Gln Leu Leu Asp Glu Val Leu His Thr Met Pro
        530                     535                     540
Ile Ala Asp Pro Gln Pro Leu Asp Trp Asp Pro Pro Val Ala Thr Met
545                     550                     555                     560
Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val
                565                     570                     575
Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu
        580                     585                     590
Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys
        595                     600                     605
Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu
        610                     615                     620
Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln
625                     630                     635                     640
```

99

```
His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg
              645                 650                 655
Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val
              660                 665                 670
Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile
              675                 680                 685
Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn
      690                 695                 700
Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly
705                 710                 715                 720
Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val
                  725                 730                 735
Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro
              740                 745                 750
Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser
              755                 760                 765
Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val
      770                 775                 780
Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
785                 790                 795
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<210> 78

<211> 3138

<212> DNA

<213> Artificial Sequence

<220>

<223> Stat5-EGFP fusion construct

<220>

<221> CDS

<222> (1)..(3135)


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<400> 78
atg gcg ggc tgg atc cag gcc cag cag ctg cag gga gac gcg ctg cgc    48
Met Ala Gly Trp Ile Gln Ala Gln Gln Leu Gln Gly Asp Ala Leu Arg
1               5                   10                  15
cag atg cag gtg ctg tac ggc cag cac ttc ccc atc gag gtc cgg cac    96
Gln Met Gln Val Leu Tyr Gly Gln His Phe Pro Ile Glu Val Arg His
              20                  25                  30
tac ttg gcc cag tgg att gag agc cag cca tgg gat gcc att gac ttg   144
Tyr Leu Ala Gln Trp Ile Glu Ser Gln Pro Trp Asp Ala Ile Asp Leu
              35                  40                  45
gac aat ccc cag gac aga gcc caa gcc acc cag ctc ctg gag ggc ctg   192
Asp Asn Pro Gln Asp Arg Ala Gln Ala Thr Gln Leu Leu Glu Gly Leu
      50                  55                  60
gtg cag gag ctg cag aag aag gcg gag cac cag gtg ggg gaa gat ggg   240
Val Gln Glu Leu Gln Lys Lys Ala Glu His Gln Val Gly Glu Asp Gly
65                  70                  75                  80
ttt tta ctg aag atc aag ctg ggg cac tac gcc acg cag ctc cag aaa   288
Phe Leu Leu Lys Ile Lys Leu Gly His Tyr Ala Thr Gln Leu Gln Lys
                  85                  90                  95
```

```
aca tat gac cgc tgc ccc ctg gag ctg gtc cgc tgc atc cgg cac att    336
Thr Tyr Asp Arg Cys Pro Leu Glu Leu Val Arg Cys Ile Arg His Ile
            100                 105                 110
ctg tac aat gaa cag agg ctg gtc cga gaa gcc aac aat tgc agc tct    384
Leu Tyr Asn Glu Gln Arg Leu Val Arg Glu Ala Asn Asn Cys Ser Ser
            115                 120                 125
ccg gct ggg atc ctg gtt gac gcc atg tcc cag aag cac ctt cag atc    432
Pro Ala Gly Ile Leu Val Asp Ala Met Ser Gln Lys His Leu Gln Ile
            130                 135                 140
aac cag aca ttt gag gag ctg cga ctg gtc acg cag gac aca gag aat    480
Asn Gln Thr Phe Glu Glu Leu Arg Leu Val Thr Gln Asp Thr Glu Asn
145                 150                 155                 160
gag ctg aag aaa ctg cag cag act cag gag tac ttc atc atc cag tac    528
Glu Leu Lys Lys Leu Gln Gln Thr Gln Glu Tyr Phe Ile Ile Gln Tyr
            165                 170                 175
cag gag agc ctg agg atc caa gct cag ttt gcc cag ctg gcc cag ctg    576
Gln Glu Ser Leu Arg Ile Gln Ala Gln Phe Ala Gln Leu Ala Gln Leu
            180                 185                 190
agc ccc cag gag cgt ctg agc cgg gag acg gcc ctc cag cag aag cag    624
Ser Pro Gln Glu Arg Leu Ser Arg Glu Thr Ala Leu Gln Gln Lys Gln
            195                 200                 205
gtg tct ctg gag gcc tgg ttg cag cgt gag gca cag aca ctg cag cag    672
Val Ser Leu Glu Ala Trp Leu Gln Arg Glu Ala Gln Thr Leu Gln Gln
            210                 215                 220
tac cgc gtg gag ctg gcc gag aag cac cag aag acc ctg cag ctg ctg    720
Tyr Arg Val Glu Leu Ala Glu Lys His Gln Lys Thr Leu Gln Leu Leu
225                 230                 235                 240
cgg aag cag cag acc atc atc ctg gat gac gag ctg atc cag tgg aag    768
Arg Lys Gln Gln Thr Ile Ile Leu Asp Asp Glu Leu Ile Gln Trp Lys
            245                 250                 255
cgg cgg cag cag ctg gcc ggg aac ggc ggg ccc ccc gag ggc agc ctg    816
Arg Arg Gln Gln Leu Ala Gly Asn Gly Gly Pro Pro Glu Gly Ser Leu
            260                 265                 270
gac gtg cta cag tcc tgg tgt gag aag ttg gcc gag atc atc tgg cag    864
Asp Val Leu Gln Ser Trp Cys Glu Lys Leu Ala Glu Ile Ile Trp Gln
            275                 280                 285
aac cgg cag cag atc cgc agg gct gag cac ctc tgc cag cag ctg ccc    912
Asn Arg Gln Gln Ile Arg Arg Ala Glu His Leu Cys Gln Gln Leu Pro
            290                 295                 300
atc ccc ggc cca gtg gag gag atg ctg gcc gag gtc aac gcc acc atc    960
Ile Pro Gly Pro Val Glu Glu Met Leu Ala Glu Val Asn Ala Thr Ile
305                 310                 315                 320
acg gac att atc tca gcc ctg gtg acc agc aca ttc atc att gag aag    1008
Thr Asp Ile Ile Ser Ala Leu Val Thr Ser Thr Phe Ile Ile Glu Lys
            325                 330                 335
cag cct cct cag gtc ctg aag acc cag acc aag ttt gca gcc acc gta    1056
Gln Pro Pro Gln Val Leu Lys Thr Gln Thr Lys Phe Ala Ala Thr Val
            340                 345                 350
cgc ctg ctg gtg ggc ggg aag ctg aac gtg cac atg aat ccc ccc cag    1104
Arg Leu Leu Val Gly Gly Lys Leu Asn Val His Met Asn Pro Pro Gln
            355                 360                 365
gtg aag gcc acc atc atc agt gag cag cag gcc aag tct ctg ctt aaa    1152
Val Lys Ala Thr Ile Ile Ser Glu Gln Gln Ala Lys Ser Leu Leu Lys
            370                 375                 380
aat gag aac acc cgc aac gag tgc agt ggt gag atc ctg aac aac tgc    1200
Asn Glu Asn Thr Arg Asn Glu Cys Ser Gly Glu Ile Leu Asn Asn Cys
385                 390                 395                 400
tgc gtg atg gag tac cac caa gcc acg ggc acc ctc agt gcc cac ttc    1248
Cys Val Met Glu Tyr His Gln Ala Thr Gly Thr Leu Ser Ala His Phe
            405                 410                 415
agg aac atg tca ctg aag agg atc aag cgt gct gac cgg cgg ggt gca    1296
Arg Asn Met Ser Leu Lys Arg Ile Lys Arg Ala Asp Arg Arg Gly Ala
            420                 425                 430
```

101

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gag tcc gtg aca gag gag aag ttc aca gtc ctg ttt gag tct cag ttc      1344
Glu Ser Val Thr Glu Glu Lys Phe Thr Val Leu Phe Glu Ser Gln Phe
        435                 440                 445
agt gtt ggc agc aat gag ctt gtg ttc cag gtg aag act ctg tcc cta      1392
Ser Val Gly Ser Asn Glu Leu Val Phe Gln Val Lys Thr Leu Ser Leu
    450                 455                 460
cct gtg gtt gtc atc gtc cac ggc agc cag gac cac aat gcc acg gct      1440
Pro Val Val Val Ile Val His Gly Ser Gln Asp His Asn Ala Thr Ala
465                 470                 475                 480
act gtg ctg tgg gac aat gcc ttt gct gag ccg ggc agg gtg cca ttt      1488
Thr Val Leu Trp Asp Asn Ala Phe Ala Glu Pro Gly Arg Val Pro Phe
                485                 490                 495
gcc gtg cct gac aaa gtg ctg tgg ccg cag ctg tgt gag gcg ctc aac      1536
Ala Val Pro Asp Lys Val Leu Trp Pro Gln Leu Cys Glu Ala Leu Asn
                500                 505                 510
atg aaa ttc aag gcc gaa gtg cag agc aac cgg ggc ctg acc aag gag      1584
Met Lys Phe Lys Ala Glu Val Gln Ser Asn Arg Gly Leu Thr Lys Glu
            515                 520                 525
aac ctc gtg ttc ctg gcg cag aaa ctg ttc aac aac agc agc agc cac      1632
Asn Leu Val Phe Leu Ala Gln Lys Leu Phe Asn Asn Ser Ser Ser His
        530                 535                 540
ctg gag gac tac agt ggc ctg tcc gtg tcc tgg tcc cag ttc aac agg      1680
Leu Glu Asp Tyr Ser Gly Leu Ser Val Ser Trp Ser Gln Phe Asn Arg
545                 550                 555                 560
gag aac ttg ccg ggc tgg aac tac acc ttc tgg cag tgg ttt gac ggg      1728
Glu Asn Leu Pro Gly Trp Asn Tyr Thr Phe Trp Gln Trp Phe Asp Gly
                565                 570                 575
gtg atg gag gtg ttg aag aag cac cac aag ccc cac tgg aat gat ggg      1776
Val Met Glu Val Leu Lys Lys His His Lys Pro His Trp Asn Asp Gly
            580                 585                 590
gcc atc cta ggt ttt gtg aat aag caa cag gcc cac gac ctg ctc atc      1824
Ala Ile Leu Gly Phe Val Asn Lys Gln Gln Ala His Asp Leu Leu Ile
        595                 600                 605
aac aag ccc gac ggg acc ttc ttg ttg cgc ttt agt gac tca gaa atc      1872
Asn Lys Pro Asp Gly Thr Phe Leu Leu Arg Phe Ser Asp Ser Glu Ile
        610                 615                 620
ggg ggc atc acc atc gcc tgg aag ttt gac tcc ccg gaa cgc aac ctg      1920
Gly Gly Ile Thr Ile Ala Trp Lys Phe Asp Ser Pro Glu Arg Asn Leu
625                 630                 635                 640
tgg aac ctg aaa cca ttc acc acg cgg gat ttc tcc atc agg tcc ctg      1968
Trp Asn Leu Lys Pro Phe Thr Thr Arg Asp Phe Ser Ile Arg Ser Leu
                645                 650                 655
gct gac cgg ctg ggg gac ctg agc tat ctc atc tat gtg ttt cct gac      2016
Ala Asp Arg Leu Gly Asp Leu Ser Tyr Leu Ile Tyr Val Phe Pro Asp
                660                 665                 670
cgc ccc aag gat gag gtc ttc tcc aag tac tac act cct gtg ctg gct      2064
Arg Pro Lys Asp Glu Val Phe Ser Lys Tyr Tyr Thr Pro Val Leu Ala
            675                 680                 685
aaa gct gtt gat gga tat gtg aaa cca cag atc aag caa gtg gtc cct      2112
Lys Ala Val Asp Gly Tyr Val Lys Pro Gln Ile Lys Gln Val Val Pro
        690                 695                 700
gag ttt gtg aat gca tct gca gat gct ggg ggc agc agc gcc acg tac      2160
Glu Phe Val Asn Ala Ser Ala Asp Ala Gly Gly Ser Ser Ala Thr Tyr
705                 710                 715                 720
atg gac cag gcc ccc tcc cca gct gtg tgc ccc cag gct ccc tat aac      2208
Met Asp Gln Ala Pro Ser Pro Ala Val Cys Pro Gln Ala Pro Tyr Asn
                725                 730                 735
atg tac cca cag aac cct gac cat gta ctc gat cag gat gga gaa ttc      2256
Met Tyr Pro Gln Asn Pro Asp His Val Leu Asp Gln Asp Gly Glu Phe
            740                 745                 750
gac ctg gat gag acc atg gat gtg gcc agg cac gtg gag gaa ctc tta      2304
Asp Leu Asp Glu Thr Met Asp Val Ala Arg His Val Glu Glu Leu Leu
    755                 760                 765
```

```
cgc cga cca atg gac agt ctt gac tcc cgc ctc tcg ccc cct gcc ggt      2352
Arg Arg Pro Met Asp Ser Leu Asp Ser Arg Leu Ser Pro Pro Ala Gly
    770                 775                 780
ctt ttc acc tct gcc aga ggc tcc ctc tca tgg gta ccg cgg gcc cgg      2400
Leu Phe Thr Ser Ala Arg Gly Ser Leu Ser Trp Val Pro Arg Ala Arg
785                 790                 795                 800
gat cca ccg gtc gcc acc atg gtg agc aag ggc gag gag ctg ttc acc      2448
Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr
                805                 810                 815
ggg gtg gtg ccc atc ctg gtc gag ctg gac ggc gac gta aac ggc cac      2496
Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His
            820                 825                 830
aag ttc agc gtg tcc ggc gag ggc gag ggc gat gcc acc tac ggc aag      2544
Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys
            835                 840                 845
ctg acc ctg aag ttc atc tgc acc acc ggc aag ctg ccc gtg ccc tgg      2592
Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp
    850                 855                 860
ccc acc ctc gtg acc acc ctg acc tac ggc gtg cag tgc ttc agc cgc      2640
Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg
865                 870                 875                 880
tac ccc gac cac atg aag cag cac gac ttc ttc aag tcc gcc atg ccc      2688
Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro
                885                 890                 895
gaa ggc tac gtc cag gag cgc acc atc ttc ttc aag gac gac ggc aac      2736
Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn
            900                 905                 910
tac aag acc cgc gcc gag gtg aag ttc gag ggc gac acc ctg gtg aac      2784
Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn
    915                 920                 925
cgc atc gag ctg aag ggc atc gac ttc aag gag gac ggc aac atc ctg      2832
Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu
    930                 935                 940
ggg cac aag ctg gag tac aac tac aac agc cac aac gtc tat atc atg      2880
Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met
945                 950                 955                 960
gcc gac aag cag aag aac ggc atc aag gtg aac ttc aag atc cgc cac      2928
Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His
                965                 970                 975
aac atc gag gac ggc agc gtg cag ctc gcc gac cac tac cag cag aac      2976
Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn
                980                 985                 990
acc ccc atc ggc gac ggc ccc gtg  ctg ctg ccc gac aac  cac tac ctg    3024
Thr Pro Ile Gly Asp Gly Pro Val  Leu Leu Pro Asp Asn  His Tyr Leu
            995                 1000                1005
agc acc  cag tcc gcc ctg agc  aaa gac ccc aac gag  aag cgc gat       3069
Ser Thr  Gln Ser Ala Leu Ser  Lys Asp Pro Asn Glu  Lys Arg Asp
    1010                1015                1020
cac atg  gtc ctg ctg gag ttc  gtg acc gcc gcc ggg  atc act ctc       3114
His Met  Val Leu Leu Glu Phe  Val Thr Ala Ala Gly  Ile Thr Leu
    1025                1030                1035
ggc atg  gac gag ctg tac aag  taa                                    3138
Gly Met  Asp Glu Leu Tyr Lys
    1040                1045


<210>   79

<211>   1045

<212>   PRT
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103

<220>

<223> Stat5-EGFP fusion construct

<400> 79
Met Ala Gly Trp Ile Gln Ala Gln Gln Leu Gln Gly Asp Ala Leu Arg
1   5   10   15
Gln Met Gln Val Leu Tyr Gly Gln His Phe Pro Ile Glu Val Arg His
            20   25   30
Tyr Leu Ala Gln Trp Ile Glu Ser Gln Pro Trp Asp Ala Ile Asp Leu
        35   40   45
Asp Asn Pro Gln Asp Arg Ala Gln Ala Thr Gln Leu Leu Glu Gly Leu
        50   55   60
Val Gln Glu Leu Gln Lys Lys Ala Glu His Gln Val Gly Glu Asp Gly
65   70   75   80
Phe Leu Leu Lys Ile Lys Leu Gly His Tyr Ala Thr Gln Leu Gln Lys
                85   90   95
Thr Tyr Asp Arg Cys Pro Leu Glu Leu Val Arg Cys Ile Arg His Ile
            100   105   110
Leu Tyr Asn Glu Gln Arg Leu Val Arg Glu Ala Asn Asn Cys Ser Ser
        115   120   125
Pro Ala Gly Ile Leu Val Asp Ala Met Ser Gln Lys His Leu Gln Ile
        130   135   140
Asn Gln Thr Phe Glu Glu Leu Arg Leu Val Thr Gln Asp Thr Glu Asn
145   150   155   160
Glu Leu Lys Lys Leu Gln Gln Thr Gln Glu Tyr Phe Ile Ile Gln Tyr
                165   170   175
Gln Glu Ser Leu Arg Ile Gln Ala Gln Phe Ala Gln Leu Ala Gln Leu
            180   185   190
Ser Pro Gln Glu Arg Leu Ser Arg Glu Thr Ala Leu Gln Gln Lys Gln
            195   200   205
Val Ser Leu Glu Ala Trp Leu Gln Arg Glu Ala Gln Thr Leu Gln Gln
        210   215   220
Tyr Arg Val Glu Leu Ala Glu Lys His Gln Lys Thr Leu Gln Leu Leu
225   230   235   240
Arg Lys Gln Gln Thr Ile Ile Leu Asp Asp Glu Leu Ile Gln Trp Lys
                245   250   255
Arg Arg Gln Gln Leu Ala Gly Asn Gly Gly Pro Pro Glu Gly Ser Leu
            260   265   270
Asp Val Leu Gln Ser Trp Cys Glu Lys Leu Ala Glu Ile Ile Trp Gln
        275   280   285
Asn Arg Gln Gln Ile Arg Arg Ala Glu His Leu Cys Gln Gln Leu Pro
        290   295   300
Ile Pro Gly Pro Val Glu Glu Met Leu Ala Glu Val Asn Ala Thr Ile
305   310   315   320
Thr Asp Ile Ile Ser Ala Leu Val Thr Ser Thr Phe Ile Ile Glu Lys
                325   330   335
Gln Pro Pro Gln Val Leu Lys Thr Gln Thr Lys Phe Ala Ala Thr Val
            340   345   350
Arg Leu Leu Val Gly Gly Lys Leu Asn Val His Met Asn Pro Pro Gln
        355   360   365
Val Lys Ala Thr Ile Ile Ser Glu Gln Gln Ala Lys Ser Leu Leu Lys
        370   375   380
Asn Glu Asn Thr Arg Asn Glu Cys Ser Gly Glu Ile Leu Asn Asn Cys
385   390   395   400
Cys Val Met Glu Tyr His Gln Ala Thr Gly Thr Leu Ser Ala His Phe
                405   410   415
Arg Asn Met Ser Leu Lys Arg Ile Lys Arg Ala Asp Arg Arg Gly Ala
            420   425   430

104

```
Glu Ser Val Thr Glu Glu Lys Phe Thr Val Leu Phe Glu Ser Gln Phe
        435             440                 445
Ser Val Gly Ser Asn Glu Leu Val Phe Gln Val Lys Thr Leu Ser Leu
    450             455                 460
Pro Val Val Val Ile Val His Gly Ser Gln Asp His Asn Ala Thr Ala
465             470                 475                     480
Thr Val Leu Trp Asp Asn Ala Phe Ala Glu Pro Gly Arg Val Pro Phe
            485                 490                     495
Ala Val Pro Asp Lys Val Leu Trp Pro Gln Leu Cys Glu Ala Leu Asn
            500                 505                 510
Met Lys Phe Lys Ala Glu Val Gln Ser Asn Arg Gly Leu Thr Lys Glu
        515                 520                 525
Asn Leu Val Phe Leu Ala Gln Lys Leu Phe Asn Asn Ser Ser Ser His
    530                 535                 540
Leu Glu Asp Tyr Ser Gly Leu Ser Val Ser Trp Ser Gln Phe Asn Arg
545                 550                 555                     560
Glu Asn Leu Pro Gly Trp Asn Tyr Thr Phe Trp Gln Trp Phe Asp Gly
            565                 570                 575
Val Met Glu Val Leu Lys Lys His His Lys Pro His Trp Asn Asp Gly
        580                 585                 590
Ala Ile Leu Gly Phe Val Asn Lys Gln Gln Ala His Asp Leu Leu Ile
    595                 600                 605
Asn Lys Pro Asp Gly Thr Phe Leu Leu Arg Phe Ser Asp Ser Glu Ile
    610                 615                 620
Gly Gly Ile Thr Ile Ala Trp Lys Phe Asp Ser Pro Glu Arg Asn Leu
625                 630                 635                     640
Trp Asn Leu Lys Pro Phe Thr Thr Arg Asp Phe Ser Ile Arg Ser Leu
            645                 650                 655
Ala Asp Arg Leu Gly Asp Leu Ser Tyr Leu Ile Tyr Val Phe Pro Asp
            660                 665                 670
Arg Pro Lys Asp Glu Val Phe Ser Lys Tyr Tyr Thr Pro Val Leu Ala
        675                 680                 685
Lys Ala Val Asp Gly Tyr Val Lys Pro Gln Ile Lys Gln Val Val Pro
    690                 695                 700
Glu Phe Val Asn Ala Ser Ala Asp Ala Gly Gly Ser Ser Ala Thr Tyr
705                 710                 715                     720
Met Asp Gln Ala Pro Ser Pro Ala Val Cys Pro Gln Ala Pro Tyr Asn
            725                 730                 735
Met Tyr Pro Gln Asn Pro Asp His Val Leu Asp Gln Asp Gly Glu Phe
        740                 745                 750
Asp Leu Asp Glu Thr Met Asp Val Ala Arg His Val Glu Glu Leu Leu
    755                 760                 765
Arg Arg Pro Met Asp Ser Leu Asp Ser Arg Leu Ser Pro Pro Ala Gly
    770                 775                 780
Leu Phe Thr Ser Ala Arg Gly Ser Leu Ser Trp Val Pro Arg Ala Arg
785                 790                 795                     800
Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr
            805                 810                 815
Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His
            820                 825                 830
Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys
        835                 840                 845
Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp
        850                 855                 860
Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg
865                 870                 875                     880
Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro
            885                 890                 895
Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn
            900                 905                 910
Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn
        915                 920                 925
Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu
```

105

```
        930                    935                    940
Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met
945                    950                    955                    960
Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His
               965                    970                    975
Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn
          980                    985                    990
Thr Pro Ile Gly Asp Gly Pro Val  Leu Leu Pro Asp Asn  His Tyr Leu
          995                   1000                   1005
Ser Thr  Gln Ser Ala Leu Ser  Lys Asp Pro Asn Glu  Lys Arg Asp
     1010                   1015                   1020
His Met  Val Leu Leu Glu Phe  Val Thr Ala Ala Gly  Ile Thr Leu
     1025                   1030                   1035
Gly Met  Asp Glu Leu Tyr Lys
     1040                   1045


<210>  80

<211>  28

<212>  DNA

<213>  Artificial Sequence


<220>

<223>  PKB-bottom/+stop Primer

<400>  80
tgggatcctc aggccgtgct gctggccg                                       28


<210>  81

<211>  27

<212>  DNA

<213>  Artificial Sequence


<220>

<223>  PKG-top Primer

<400>  81
gtctcgaggg agcatgggca ccttgcg                                        27


<210>  82

<211>  27

<212>  DNA

<213>  Artificial Sequence
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<220>

<223> PKG-bottom/-stop Primer

<400> 82
tgggatccga gaagtctata tcccatc   27

<210> 83

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> PKG-bottom/+stop Primer

<400> 83
tgggatcctt agaagtctat atcccatc   28

<210> 84

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> NFAT-top Primer

<400> 84
gtctcgagcc atgaacgccc ccgagcgg   28

<210> 85

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> NFAT-bottom/stop Primer

<400> 85
gtgaattctc gtctgatttc tggcaggagg   30

<210> 86

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> NFATbottom/+stop Primer

<400> 86
gtgaattctt tacgtctgat ttctggcagg   30

<210> 87

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> NFkappaB-top Primer

<400> 87
gtctcgagcc atggacgaac tgttcccct catc   34

<210> 88

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> NFkappaB-bottom/-stop Primer

<400> 88
gtggatccaa ggagctgatc tgactcagca g   31

<210> 89

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> NFkappaB-bottom/+stop Primer

<400> 89
gtggatcctt aggagctgat ctgactcagc ag   32

<210> 90

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> ABD-top Primer

<400> 90
cctcctaagc ttatcatgga ccattatgat tc   32

<210> 91

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> ABD-bottom/-stop Primer

<400> 91
cctcctggat ccctgcgcag gatgatggtc cag   33

<210> 92

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> RhoA-top Primer

<400> 92
ggatggaagc ttcaatggct gccatccgga agaaactggt gattg   45

<210> 93

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> RhoAbottom/+stop Primer

<400> 93
ggatgggggat cctcacaaga caaggcaacc agatttttc ttccc   45

<210> 94

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> VASP-top Primer

<400> 94
gggaagcttc catgagcgag acggtcatc   29

<210> 95

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> VASPbottom/+stop Primer

<400> 95
cccggatcct cagggagaac cccgcttc   28

<210> 96

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> IKK-top Primer

<400> 96
gtgaattcga ccatggagcg gccccgggg   30

<210> 97

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> IKK-bottom/-stop Primer

<400> 97
gtggtacccca ttctgttaac caactcc   27

<210> 98

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> IKK-bottom/+stop Primer

<400> 98
gtggtacctc attctgttaa ccaactcc   28

<210> 99

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> PTP-top Primer

<400> 99
gtctcgagag atgctgtccc gtgggtgg   28

<210> 100

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> PTP-bottom/-stop Primer

<400> 100
gtgaattcgc ttcctcttga gggaacc   27

<210> 101

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> PTP-bottom/+stop Primer

<400> 101
gtgaattcac ttcctcttga gggaacc   27

<210> 102

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> CDK2-top Primer

<400> 102
gtctcgagcc atggagaact tccaaaagg   29

<210> 103

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> CDK2bottom/-stop Primer

<400> 103
gtggatccca gagtcgaaga tggggtac   28

<210> 104

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> CDK2bottom/+stop Primer

<400> 104
gtggatcctc agagtcgaag atggggtac   29

<210> 105

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Zap70-top Primer

<400> 105
gtgaattcgg cgatgccaga ccccgcggcg   30

<210> 106

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Zap70bottom/-stop Primer

<400> 106
gtggatccca ggcacaggca gcctcagcct tc   32

<210> 107

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Zap70bottom/+stop Primer

<400> 107
gtggatcctc aggcacaggc agcctcagcc ttc   33

<210> 108

<211> 2616

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-Zap70 fusion

<220>

<221> CDS

<222> (1)..(2613)

<400> 108
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atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg     48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc     96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc    144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc    192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag    240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag    288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag    336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100                 105                 110
```

114

```
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc        384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115                     120                 125

atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac        432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                     135                 140

aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac        480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                     150                 155                 160

ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc        528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175

gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc        576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                     185                 190

ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg        624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
                195                 200                 205

agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc        672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
        210                     215                 220

gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc        720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                     230                 235                 240

gga ctc aga tct cga gct caa gct tcg aat tcg gcg atg cca gac ccc        768
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Ala Met Pro Asp Pro
                245                 250                 255

gcg gcg cac ctg ccc ttc ttc tac ggc agc atc tcg cgt gcc gag gcc        816
Ala Ala His Leu Pro Phe Phe Tyr Gly Ser Ile Ser Arg Ala Glu Ala
            260                     265                 270

gag gag cac ctg aag ctg gcg ggc atg gcg gac ggg ctc ttc ctg ctg        864
Glu Glu His Leu Lys Leu Ala Gly Met Ala Asp Gly Leu Phe Leu Leu
            275                     280                 285

cgc cag tgc ctg cgc tcg ctg ggc ggc tat gtg ctg tcg ctc gtg cac        912
Arg Gln Cys Leu Arg Ser Leu Gly Gly Tyr Val Leu Ser Leu Val His
        290                     295                 300

gat gtg cgc ttc cac cac ttt ccc atc gag cgc cag ctc aac ggc acc        960
Asp Val Arg Phe His His Phe Pro Ile Glu Arg Gln Leu Asn Gly Thr
305                     310                 315                 320

tac gcc att gcc ggc ggc aaa gcg cac tgt gga ccg gca gag ctc tgc       1008
Tyr Ala Ile Ala Gly Gly Lys Ala His Cys Gly Pro Ala Glu Leu Cys
                325                 330                 335

gag ttc tac tcg cgc gac ccc gac ggg ctg ccc tgc aac ctg cgc aag       1056
Glu Phe Tyr Ser Arg Asp Pro Asp Gly Leu Pro Cys Asn Leu Arg Lys
                340                 345                 350

ccg tgc aac cgg ccg tcg ggc ctc gag ccg cag ccg ggg gtc ttc gac       1104
Pro Cys Asn Arg Pro Ser Gly Leu Glu Pro Gln Pro Gly Val Phe Asp
        355                     360                 365

tgc ctg cga gac gcc atg gtg cgt gac tac gtg cgc cag acg tgg aag       1152
Cys Leu Arg Asp Ala Met Val Arg Asp Tyr Val Arg Gln Thr Trp Lys
        370                     375                 380

ctg gag ggc gag gcc ctg gag cag gcc atc atc agc cag gcc ccg cag       1200
Leu Glu Gly Glu Ala Leu Glu Gln Ala Ile Ile Ser Gln Ala Pro Gln
385                     390                 395                 400

gtg gag aag ctc att gct acg acg gcc cac gag cgg atg ccc tgg tac       1248
Val Glu Lys Leu Ile Ala Thr Thr Ala His Glu Arg Met Pro Trp Tyr
                405                 410                 415

cac agc agc ctg acg cgt gag gag gcc gag cgc aaa ctt tac tct ggg       1296
His Ser Ser Leu Thr Arg Glu Glu Ala Glu Arg Lys Leu Tyr Ser Gly
                420                 425                 430

gcg cag acc gac ggc aag ttc ctg ctg agg ccg cgg aag gag cag ggc       1344
Ala Gln Thr Asp Gly Lys Phe Leu Leu Arg Pro Arg Lys Glu Gln Gly
        435                     440                 445
```

115

```
aca tac gcc ctg tcc ctc atc tat ggg aag acg gtg tac cac tac ctc        1392
Thr Tyr Ala Leu Ser Leu Ile Tyr Gly Lys Thr Val Tyr His Tyr Leu
    450                     455                 460

atc agc caa gac aag gcg ggc aag tac tgc att ccc gag ggc acc aag        1440
Ile Ser Gln Asp Lys Ala Gly Lys Tyr Cys Ile Pro Glu Gly Thr Lys
465                     470                 475                 480

ttt gac acg ctc tgg cag ctg gtg gag tat ctg aag ctg aag gcg gac        1488
Phe Asp Thr Leu Trp Gln Leu Val Glu Tyr Leu Lys Leu Lys Ala Asp
                    485                 490                 495

ggg ctc atc tac tgc ctg aag gag gcc tgc ccc aac agc agt gcc agc        1536
Gly Leu Ile Tyr Cys Leu Lys Glu Ala Cys Pro Asn Ser Ser Ala Ser
                500                 505                 510

aac gcc tca ggg gct gct gct ccc aca ctc cca gcc cac cca tcc acg        1584
Asn Ala Ser Gly Ala Ala Ala Pro Thr Leu Pro Ala His Pro Ser Thr
            515                 520                 525

ttg act cat cct cag aga cga atc gac acc ctc aac tca gat gga tac        1632
Leu Thr His Pro Gln Arg Arg Ile Asp Thr Leu Asn Ser Asp Gly Tyr
        530                 535                 540

acc cct gag cca gca cgc ata acg tcc cca gac aaa ccg cgg ccg atg        1680
Thr Pro Glu Pro Ala Arg Ile Thr Ser Pro Asp Lys Pro Arg Pro Met
545                     550                 555                 560

ccc atg gac acg agc gtg tat gag agc ccc tac agc gac cca gag gag        1728
Pro Met Asp Thr Ser Val Tyr Glu Ser Pro Tyr Ser Asp Pro Glu Glu
                565                 570                 575

ctc aag gac aag aag ctc ttc ctg aag cgc gat aac ctc ctc ata gct        1776
Leu Lys Asp Lys Lys Leu Phe Leu Lys Arg Asp Asn Leu Leu Ile Ala
            580                 585                 590

gac att gaa ctt ggc tgc ggc aac ttt ggc tca gtg cgc cag ggc gtg        1824
Asp Ile Glu Leu Gly Cys Gly Asn Phe Gly Ser Val Arg Gln Gly Val
            595                 600                 605

tac cgc atg cgc aag aag cag atc gac gtg gcc atc aag gtg ctg aag        1872
Tyr Arg Met Arg Lys Lys Gln Ile Asp Val Ala Ile Lys Val Leu Lys
    610                 615                 620

cag ggc acg gag aag gca gac acg gaa gag atg atg cgc gag gcg cag        1920
Gln Gly Thr Glu Lys Ala Asp Thr Glu Glu Met Met Arg Glu Ala Gln
625                     630                 635                 640

atc atg cac cag ctg gac aac ccc tac atc gtg cgg ctc att ggc gtc        1968
Ile Met His Gln Leu Asp Asn Pro Tyr Ile Val Arg Leu Ile Gly Val
                645                 650                 655

tgc cag gcc gag gcc ctc atg ctg gtc atg gag atg gct ggg ggc ggg        2016
Cys Gln Ala Glu Ala Leu Met Leu Val Met Glu Met Ala Gly Gly Gly
            660                 665                 670

ccg ctg cac aag ttc ctg gtc ggc aag agg gag gag atc cct gtg agc        2064
Pro Leu His Lys Phe Leu Val Gly Lys Arg Glu Glu Ile Pro Val Ser
        675                 680                 685

aat gtg gcc gag ctg ctg cac cag gtg tcc atg ggg atg aag tac ctg        2112
Asn Val Ala Glu Leu Leu His Gln Val Ser Met Gly Met Lys Tyr Leu
    690                 695                 700

gag gag aag aac ttt gtg cac cgt gac ctg gcg gcc cgc aac gtc ctg        2160
Glu Glu Lys Asn Phe Val His Arg Asp Leu Ala Ala Arg Asn Val Leu
705                     710                 715                 720

ctg gtt aac cgg cac tac gcc aag atc agc gac ttt ggc ctc tcc aaa        2208
Leu Val Asn Arg His Tyr Ala Lys Ile Ser Asp Phe Gly Leu Ser Lys
                725                 730                 735

gca ctg ggt gcc gac gac agc tac tac act gcc cgc tca gca ggg aag        2256
Ala Leu Gly Ala Asp Asp Ser Tyr Tyr Thr Ala Arg Ser Ala Gly Lys
            740                 745                 750

tgg ccg ctc aag tgg tac gca ccc gaa tgc atc aac ttc cgc aag ttc        2304
Trp Pro Leu Lys Trp Tyr Ala Pro Glu Cys Ile Asn Phe Arg Lys Phe
        755                 760                 765

tcc agc cgc agc gat gtc tgg agc tat ggg gtc acc atg tgg gag gcc        2352
Ser Ser Arg Ser Asp Val Trp Ser Tyr Gly Val Thr Met Trp Glu Ala
    770                 775                 780
```

116

```
ttg tcc tac ggc cag aag ccc tac aag aag atg aaa ggg ccg gag gtc        2400
Leu Ser Tyr Gly Gln Lys Pro Tyr Lys Lys Met Lys Gly Pro Glu Val
785                 790             795                 800
atg gcc ttc atc gag cag ggc aag cgg atg gag tgc cca cca gag tgt        2448
Met Ala Phe Ile Glu Gln Gly Lys Arg Met Glu Cys Pro Pro Glu Cys
                805             810             815
cca ccc gaa ctg tac gca ctc atg agt gac tgc tgg atc tac aag tgg        2496
Pro Pro Glu Leu Tyr Ala Leu Met Ser Asp Cys Trp Ile Tyr Lys Trp
            820             825             830
gag gat cgc ccc gac ttc ctg acc gtg gag cag cgc atg cga gcc tgt        2544
Glu Asp Arg Pro Asp Phe Leu Thr Val Glu Gln Arg Met Arg Ala Cys
            835             840             845
tac tac agc ctg gcc agc aag gtg gaa ggg ccc cca ggc agc aca cag        2592
Tyr Tyr Ser Leu Ala Ser Lys Val Glu Gly Pro Pro Gly Ser Thr Gln
850             855             860
aag gct gag gct gcc tgt gcc tga                                        2616
Lys Ala Glu Ala Ala Cys Ala
865             870
```

<210> 109

<211> 871

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-Zap70 fusion

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<400> 109
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5               10              15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20              25              30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35              40              45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50              55              60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65              70              75              80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85              90              95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100             105             110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115             120             125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130             135             140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145             150             155             160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165             170             175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180             185             190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195             200             205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210             215             220
```

117

```
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225             230             235                 240
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Ala Met Pro Asp Pro
            245             250                 255
Ala Ala His Leu Pro Phe Phe Tyr Gly Ser Ile Ser Arg Ala Glu Ala
            260             265                 270
Glu Glu His Leu Lys Leu Ala Gly Met Ala Asp Gly Leu Phe Leu Leu
            275             280                 285
Arg Gln Cys Leu Arg Ser Leu Gly Gly Tyr Val Leu Ser Leu Val His
        290             295             300
Asp Val Arg Phe His His Phe Pro Ile Glu Arg Gln Leu Asn Gly Thr
305             310             315                 320
Tyr Ala Ile Ala Gly Gly Lys Ala His Cys Gly Pro Ala Glu Leu Cys
            325             330                 335
Glu Phe Tyr Ser Arg Asp Pro Asp Gly Leu Pro Cys Asn Leu Arg Lys
            340             345                 350
Pro Cys Asn Arg Pro Ser Gly Leu Glu Pro Gln Pro Gly Val Phe Asp
            355             360             365
Cys Leu Arg Asp Ala Met Val Arg Asp Tyr Val Arg Gln Thr Trp Lys
        370             375             380
Leu Glu Gly Glu Ala Leu Glu Gln Ala Ile Ile Ser Gln Ala Pro Gln
385             390             395                 400
Val Glu Lys Leu Ile Ala Thr Thr Ala His Glu Arg Met Pro Trp Tyr
            405             410                 415
His Ser Ser Leu Thr Arg Glu Glu Ala Glu Arg Lys Leu Tyr Ser Gly
            420             425                 430
Ala Gln Thr Asp Gly Lys Phe Leu Leu Arg Pro Arg Lys Glu Gln Gly
            435             440                 445
Thr Tyr Ala Leu Ser Leu Ile Tyr Gly Lys Thr Val Tyr His Tyr Leu
    450             455             460
Ile Ser Gln Asp Lys Ala Gly Lys Tyr Cys Ile Pro Glu Gly Thr Lys
465             470             475                 480
Phe Asp Thr Leu Trp Gln Leu Val Glu Tyr Leu Lys Leu Lys Ala Asp
            485             490                 495
Gly Leu Ile Tyr Cys Leu Lys Glu Ala Cys Pro Asn Ser Ser Ala Ser
            500             505             510
Asn Ala Ser Gly Ala Ala Ala Pro Thr Leu Pro Ala His Pro Ser Thr
    515             520             525
Leu Thr His Pro Gln Arg Arg Ile Asp Thr Leu Asn Ser Asp Gly Tyr
    530             535             540
Thr Pro Glu Pro Ala Arg Ile Thr Ser Pro Asp Lys Pro Arg Pro Met
545             550             555                 560
Pro Met Asp Thr Ser Val Tyr Glu Ser Pro Tyr Ser Asp Pro Glu Glu
            565             570                 575
Leu Lys Asp Lys Lys Leu Phe Leu Lys Arg Asp Asn Leu Leu Ile Ala
            580             585             590
Asp Ile Glu Leu Gly Cys Gly Asn Phe Gly Ser Val Arg Gln Gly Val
            595             600             605
Tyr Arg Met Arg Lys Lys Gln Ile Asp Val Ala Ile Lys Val Leu Lys
    610             615             620
Gln Gly Thr Glu Lys Ala Asp Thr Glu Glu Met Met Arg Glu Ala Gln
625             630             635                 640
Ile Met His Gln Leu Asp Asn Pro Tyr Ile Val Arg Leu Ile Gly Val
            645             650                 655
Cys Gln Ala Glu Ala Leu Met Leu Val Met Glu Met Ala Gly Gly Gly
            660             665             670
Pro Leu His Lys Phe Leu Val Gly Lys Arg Glu Glu Ile Pro Val Ser
    675             680             685
Asn Val Ala Glu Leu Leu His Gln Val Ser Met Gly Met Lys Tyr Leu
    690             695             700
Glu Glu Lys Asn Phe Val His Arg Asp Leu Ala Ala Arg Asn Val Leu
705             710             715                 720
Leu Val Asn Arg His Tyr Ala Lys Ile Ser Asp Phe Gly Leu Ser Lys
```

118

```
                    725                     730                     735
Ala Leu Gly Ala Asp Asp Ser Tyr Tyr Thr Ala Arg Ser Ala Gly Lys
                740                     745                     750
Trp Pro Leu Lys Trp Tyr Ala Pro Glu Cys Ile Asn Phe Arg Lys Phe
                755    ·                760                     765
Ser Ser Arg Ser Asp Val Trp Ser Tyr Gly Val Thr Met Trp Glu Ala
        770                     775                     780
Leu Ser Tyr Gly Gln Lys Pro Tyr Lys Lys Met Lys Gly Pro Glu Val
785                     790                     795                     800
Met Ala Phe Ile Glu Gln Gly Lys Arg Met Glu Cys Pro Pro Glu Cys
                805                     810                     815
Pro Pro Glu Leu Tyr Ala Leu Met Ser Asp Cys Trp Ile Tyr Lys Trp
                820                     825                     830
Glu Asp Arg Pro Asp Phe Leu Thr Val Glu Gln Arg Met Arg Ala Cys
        835                     840                     845
Tyr Tyr Ser Leu Ala Ser Lys Val Glu Gly Pro Pro Gly Ser Thr Gln
    850                     855                     860
Lys Ala Glu Ala Ala Cys Ala
865                     870
```

<210> 110

<211> 2598

<212> DNA

<213> Artificial Sequence

<220>

<223> Zap70-EGFP fusion

<220>

<221> CDS

<222> (1)..(2595)


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<400> 110
atg cca gac ccc gcg gcg cac ctg ccc ttc ttc tac ggc agc atc tcg      48
Met Pro Asp Pro Ala Ala His Leu Pro Phe Phe Tyr Gly Ser Ile Ser
1               5                   10                  15
cgt gcc gag gcc gag gag cac ctg aag ctg gcg ggc atg gcg gac ggg      96
Arg Ala Glu Ala Glu Glu His Leu Lys Leu Ala Gly Met Ala Asp Gly
                20                  25                  30
ctc ttc ctg ctg cgc cag tgc ctg cgc tcg ctg ggc ggc tat gtg ctg     144
Leu Phe Leu Leu Arg Gln Cys Leu Arg Ser Leu Gly Gly Tyr Val Leu
            35                  40                  45
tcg ctc gtg cac gat gtg cgc ttc cac cac ttt ccc atc gag cgc cag     192
Ser Leu Val His Asp Val Arg Phe His His Phe Pro Ile Glu Arg Gln
        50                  55                  60
ctc aac ggc acc tac gcc att gcc ggc ggc aaa gcg cac tgt gga ccg     240
Leu Asn Gly Thr Tyr Ala Ile Ala Gly Gly Lys Ala His Cys Gly Pro
65                  70                  75                  80
gca gag ctc tgc gag ttc tac tcg cgc gac ccc gac ggg ctg ccc tgc     288
Ala Glu Leu Cys Glu Phe Tyr Ser Arg Asp Pro Asp Gly Leu Pro Cys
                85                  90                  95
aac ctg cgc aag ccg tgc aac cgg ccg tcg ggc ctc gag ccg cag ccg     336
```

```
Asn Leu Arg Lys Pro Cys Asn Arg Pro Ser Gly Leu Glu Pro Gln Pro
            100                     105                 110
ggg gtc ttc gac tgc ctg cga gac gcc atg gtg cgt gac tac gtg cgc    384
Gly Val Phe Asp Cys Leu Arg Asp Ala Met Val Arg Asp Tyr Val Arg
            115                     120                 125
cag acg tgg aag ctg gag ggc gag gcc ctg gag cag gcc atc atc agc    432
Gln Thr Trp Lys Leu Glu Gly Glu Ala Leu Glu Gln Ala Ile Ile Ser
        130                     135                 140
cag gcc ccg cag gtg gag aag ctc att gct acg acg gcc cac gag cgg    480
Gln Ala Pro Gln Val Glu Lys Leu Ile Ala Thr Thr Ala His Glu Arg
145                     150                     155                 160
atg ccc tgg tac cac agc agc ctg acg cgt gag gag gcc gag cgc aaa    528
Met Pro Trp Tyr His Ser Ser Leu Thr Arg Glu Glu Ala Glu Arg Lys
                    165                     170                 175
ctt tac tct ggg gcg cag acc gac ggc aag ttc ctg ctg agg ccg cgg    576
Leu Tyr Ser Gly Ala Gln Thr Asp Gly Lys Phe Leu Leu Arg Pro Arg
                180                     185                 190
aag gag cag ggc aca tac gcc ctg tcc ctc atc tat ggg aag acg gtg    624
Lys Glu Gln Gly Thr Tyr Ala Leu Ser Leu Ile Tyr Gly Lys Thr Val
            195                     200                 205
tac cac tac ctc atc agc caa gac aag gcg ggc aag tac tgc att ccc    672
Tyr His Tyr Leu Ile Ser Gln Asp Lys Ala Gly Lys Tyr Cys Ile Pro
        210                     215                 220
gag ggc acc aag ttt gac acg ctc tgg cag ctg gtg gag tat ctg aag    720
Glu Gly Thr Lys Phe Asp Thr Leu Trp Gln Leu Val Glu Tyr Leu Lys
225                     230                     235                 240
ctg aag gcg gac ggg ctc atc tac tgc ctg aag gag gcc tgc ccc aac    768
Leu Lys Ala Asp Gly Leu Ile Tyr Cys Leu Lys Glu Ala Cys Pro Asn
                    245                     250                 255
agc agt gcc agc aac gcc tca ggg gct gct gct ccc aca ctc cca gcc    816
Ser Ser Ala Ser Asn Ala Ser Gly Ala Ala Ala Pro Thr Leu Pro Ala
            260                     265                 270
cac cca tcc acg ttg act cat cct cag aga cga atc gac acc ctc aac    864
His Pro Ser Thr Leu Thr His Pro Gln Arg Arg Ile Asp Thr Leu Asn
        275                     280                 285
tca gat gga tac acc cct gag cca gca cgc ata acg tcc cca gac aaa    912
Ser Asp Gly Tyr Thr Pro Glu Pro Ala Arg Ile Thr Ser Pro Asp Lys
        290                     295                 300
ccg cgg ccg atg ccc atg gac acg agc gtg tat gag agc ccc tac agc    960
Pro Arg Pro Met Pro Met Asp Thr Ser Val Tyr Glu Ser Pro Tyr Ser
305                     310                     315                 320
gac cca gag gag ctc aag gac aag aag ctc ttc ctg aag cgc gat aac   1008
Asp Pro Glu Glu Leu Lys Asp Lys Lys Leu Phe Leu Lys Arg Asp Asn
                    325                     330                 335
ctc ctc ata gct gac att gaa ctt ggc tgc ggc aac ttt ggc tca gtg   1056
Leu Leu Ile Ala Asp Ile Glu Leu Gly Cys Gly Asn Phe Gly Ser Val
            340                     345                 350
cgc cag ggc gtg tac cgc atg cgc aag aag cag atc gac gtg gcc atc   1104
Arg Gln Gly Val Tyr Arg Met Arg Lys Lys Gln Ile Asp Val Ala Ile
        355                     360                 365
aag gtg ctg aag cag ggc acg gag aag gca gac acg gaa gag atg atg   1152
Lys Val Leu Lys Gln Gly Thr Glu Lys Ala Asp Thr Glu Glu Met Met
        370                     375                 380
cgc gag gcg cag atc atg cac cag ctg gac aac ccc tac atc gtg cgg   1200
Arg Glu Ala Gln Ile Met His Gln Leu Asp Asn Pro Tyr Ile Val Arg
385                     390                     395                 400
ctc att ggc gtc tgc cag gcc gag gcc ctc atg ctg gtc atg gag atg   1248
Leu Ile Gly Val Cys Gln Ala Glu Ala Leu Met Leu Val Met Glu Met
                    405                     410                 415
gct ggg ggc ggg ccg ctg cac aag ttc ctg gtc ggc aag agg gag gag   1296
Ala Gly Gly Gly Pro Leu His Lys Phe Leu Val Gly Lys Arg Glu Glu
            420                     425                 430
atc cct gtg agc aat gtg gcc gag ctg ctg cac cag gtg tcc atg ggg   1344
```

120

```
Ile Pro Val Ser Asn Val Ala Glu Leu Leu His Gln Val Ser Met Gly
        435                 440                 445
atg aag tac ctg gag gag aag aac ttt gtg cac cgt gac ctg gcg gcc    1392
Met Lys Tyr Leu Glu Glu Lys Asn Phe Val His Arg Asp Leu Ala Ala
        450                 455                 460
cgc aac gtc ctg ctg gtt aac cgg cac tac gcc aag atc agc gac ttt    1440
Arg Asn Val Leu Leu Val Asn Arg His Tyr Ala Lys Ile Ser Asp Phe
465                 470                 475                 480
ggc ctc tcc aaa gca ctg ggt gcc gac gac agc tac tac act gcc cgc    1488
Gly Leu Ser Lys Ala Leu Gly Ala Asp Asp Ser Tyr Tyr Thr Ala Arg
                485                 490                 495
tca gca ggg aag tgg ccg ctc aag tgg tac gca ccc gaa tgc atc aac    1536
Ser Ala Gly Lys Trp Pro Leu Lys Trp Tyr Ala Pro Glu Cys Ile Asn
            500                 505                 510
ttc cgc aag ttc tcc agc cgc agc gat gtc tgg agc tat ggg gtc acc    1584
Phe Arg Lys Phe Ser Ser Arg Ser Asp Val Trp Ser Tyr Gly Val Thr
        515                 520                 525
atg tgg gag gcc ttg tcc tac ggc cag aag ccc tac aag aag atg aaa    1632
Met Trp Glu Ala Leu Ser Tyr Gly Gln Lys Pro Tyr Lys Lys Met Lys
        530                 535                 540
ggg ccg gag gtc atg gcc ttc atc gag cag ggc aag cgg atg gag tgc    1680
Gly Pro Glu Val Met Ala Phe Ile Glu Gln Gly Lys Arg Met Glu Cys
545                 550                 555                 560
cca cca gag tgt cca ccc gaa ctg tac gca ctc atg agt gac tgc tgg    1728
Pro Pro Glu Cys Pro Pro Glu Leu Tyr Ala Leu Met Ser Asp Cys Trp
                565                 570                 575
atc tac aag tgg gag gat cgc ccc gac ttc ctg acc gtg gag cag cgc    1776
Ile Tyr Lys Trp Glu Asp Arg Pro Asp Phe Leu Thr Val Glu Gln Arg
            580                 585                 590
atg cga gcc tgt tac tac agc ctg gcc agc aag gtg gaa ggg ccc cca    1824
Met Arg Ala Cys Tyr Tyr Ser Leu Ala Ser Lys Val Glu Gly Pro Pro
        595                 600                 605
ggc agc aca cag aag gct gag gct gcc tgt gcc tgg gat cca ccg gtc    1872
Gly Ser Thr Gln Lys Ala Glu Ala Ala Cys Ala Trp Asp Pro Pro Val
        610                 615                 620
gcc acc atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc    1920
Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro
625                 630                 635                 640
atc ctg gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg    1968
Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val
            645                 650                 655
tcc ggc gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag    2016
Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys
                660                 665                 670
ttc atc tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg    2064
Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val
            675                 680                 685
acc acc ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac    2112
Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His
        690                 695                 700
atg aag cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc    2160
Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val
705                 710                 715                 720
cag gag cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc    2208
Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg
                725                 730                 735
gcc gag gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg    2256
Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu
            740                 745                 750
aag ggc atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg    2304
Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu
            755                 760                 765
gag tac aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag    2352
```

121

```
Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln
    770                 775                 780
aag aac ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac        2400
Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp
785                 790                 795                 800
ggc agc gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc        2448
Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly
                805                 810                 815
gac ggc ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc        2496
Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser
                820                 825                 830
gcc ctg agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg        2544
Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu
                835                 840                 845
gag ttc gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac        2592
Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr
850                 855                 860
aag taa                                                                 2598
Lys
865


<210>    111

<211>    865

<212>    PRT

<213>    Artificial Sequence


<220>

<223>    Zap70-EGFP fusion


<400>    111
Met Pro Asp Pro Ala Ala His Leu Pro Phe Phe Tyr Gly Ser Ile Ser
1                 5                 10                15
Arg Ala Glu Ala Glu Glu His Leu Lys Leu Ala Gly Met Ala Asp Gly
                20                25                30
Leu Phe Leu Leu Arg Gln Cys Leu Arg Ser Leu Gly Gly Tyr Val Leu
        35                40                45
Ser Leu Val His Asp Val Arg Phe His His Phe Pro Ile Glu Arg Gln
    50                55                60
Leu Asn Gly Thr Tyr Ala Ile Ala Gly Gly Lys Ala His Cys Gly Pro
65                70                75                80
Ala Glu Leu Cys Glu Phe Tyr Ser Arg Asp Pro Asp Gly Leu Pro Cys
                85                90                95
Asn Leu Arg Lys Pro Cys Asn Arg Pro Ser Gly Leu Glu Pro Gln Pro
                100                105                110
Gly Val Phe Asp Cys Leu Arg Asp Ala Met Val Arg Asp Tyr Val Arg
            115                120                125
Gln Thr Trp Lys Leu Glu Gly Glu Ala Leu Glu Gln Ala Ile Ile Ser
    130                135                140
Gln Ala Pro Gln Val Glu Lys Leu Ile Ala Thr Thr Ala His Glu Arg
145                150                155                160
Met Pro Trp Tyr His Ser Ser Leu Thr Arg Glu Glu Ala Glu Arg Lys
                165                170                175
Leu Tyr Ser Gly Ala Gln Thr Asp Gly Lys Phe Leu Leu Arg Pro Arg
            180                185                190

Lys Glu Gln Gly Thr Tyr Ala Leu Ser Leu Ile Tyr Gly Lys Thr Val
```

122

```
                    195                    200                    205
Tyr His Tyr Leu Ile Ser Gln Asp Lys Ala Gly Lys Tyr Cys Ile Pro
    210                    215                    220
Glu Gly Thr Lys Phe Asp Thr Leu Trp Gln Leu Val Glu Tyr Leu Lys
225                    230                    235                    240
Leu Lys Ala Asp Gly Leu Ile Tyr Cys Leu Lys Glu Ala Cys Pro Asn
                245                    250                    255
Ser Ser Ala Ser Asn Ala Ser Gly Ala Ala Ala Pro Thr Leu Pro Ala
                260                    265                    270
His Pro Ser Thr Leu Thr His Pro Gln Arg Arg Ile Asp Thr Leu Asn
        275                    280                    285
Ser Asp Gly Tyr Thr Pro Glu Pro Ala Arg Ile Thr Ser Pro Asp Lys
    290                    295                    300
Pro Arg Pro Met Pro Met Asp Thr Ser Val Tyr Glu Ser Pro Tyr Ser
305                    310                    315                    320
Asp Pro Glu Glu Leu Lys Asp Lys Lys Leu Phe Leu Lys Arg Asp Asn
                325                    330                    335
Leu Leu Ile Ala Asp Ile Glu Leu Gly Cys Gly Asn Phe Gly Ser Val
                340                    345                    350
Arg Gln Gly Val Tyr Arg Met Arg Lys Lys Gln Ile Asp Val Ala Ile
        355                    360                    365
Lys Val Leu Lys Gln Gly Thr Glu Lys Ala Asp Thr Glu Glu Met Met
    370                    375                    380
Arg Glu Ala Gln Ile Met His Gln Leu Asp Asn Pro Tyr Ile Val Arg
385                    390                    395                    400
Leu Ile Gly Val Cys Gln Ala Glu Ala Leu Met Leu Val Met Glu Met
                405                    410                    415
Ala Gly Gly Gly Pro Leu His Lys Phe Leu Val Gly Lys Arg Glu Glu
                420                    425                    430
Ile Pro Val Ser Asn Val Ala Glu Leu Leu His Gln Val Ser Met Gly
        435                    440                    445
Met Lys Tyr Leu Glu Glu Lys Asn Phe Val His Arg Asp Leu Ala Ala
    450                    455                    460
Arg Asn Val Leu Leu Val Asn Arg His Tyr Ala Lys Ile Ser Asp Phe
465                    470                    475                    480
Gly Leu Ser Lys Ala Leu Gly Ala Asp Asp Ser Tyr Tyr Thr Ala Arg
                485                    490                    495
Ser Ala Gly Lys Trp Pro Leu Lys Trp Tyr Ala Pro Glu Cys Ile Asn
                500                    505                    510
Phe Arg Lys Phe Ser Ser Arg Ser Asp Val Trp Ser Tyr Gly Val Thr
        515                    520                    525
Met Trp Glu Ala Leu Ser Tyr Gly Gln Lys Pro Tyr Lys Lys Met Lys
    530                    535                    540
Gly Pro Glu Val Met Ala Phe Ile Glu Gln Gly Lys Arg Met Glu Cys
545                    550                    555                    560
Pro Pro Glu Cys Pro Pro Glu Leu Tyr Ala Leu Met Ser Asp Cys Trp
                565                    570                    575
Ile Tyr Lys Trp Glu Asp Arg Pro Asp Phe Leu Thr Val Glu Gln Arg
        580                    585                    590
Met Arg Ala Cys Tyr Tyr Ser Leu Ala Ser Lys Val Glu Gly Pro Pro
    595                    600                    605
Gly Ser Thr Gln Lys Ala Glu Ala Ala Cys Ala Trp Asp Pro Pro Val
    610                    615                    620
Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro
625                    630                    635                    640
Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val
                645                    650                    655
Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys
                660                    665                    670
Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val
        675                    680                    685
Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His
    690                    695                    700
```

123

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Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val
705                 710                 715                 720
Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg
                725                 730                 735
Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu
                740                 745                 750
Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu
            755                 760                 765
Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln
    770                 775                 780
Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp
785                 790                 795                 800
Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly
                805                 810                 815
Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser
            820                 825                 830
Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu
            835                 840                 845
Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr
    850                 855                 860
Lys
865


<210>  112

<211>  1635

<212>  DNA

<213>  Artificial Sequence


<220>

<223>  CDK2-EGFP fusion

<220>

<221>  CDS

<222>  (1)..(1632)


<400>  112
atg gag aac ttc caa aag gtg gaa aag atc gga gag ggc acg tac gga      48
Met Glu Asn Phe Gln Lys Val Glu Lys Ile Gly Glu Gly Thr Tyr Gly
1               5                   10                  15
gtt gtg tac aaa gcc aga aac aag ttg acg gga gag gtg gtg gcg ctt      96
Val Val Tyr Lys Ala Arg Asn Lys Leu Thr Gly Glu Val Val Ala Leu
                20                  25                  30
aag aaa atc cgc ctg gac act gag act gag ggt gtg ccc agt act gcc     144
Lys Lys Ile Arg Leu Asp Thr Glu Thr Glu Gly Val Pro Ser Thr Ala
            35                  40                  45
atc cga gag atc tct ctg ctt aag gag ctt aac cat cct aat att gtc     192
Ile Arg Glu Ile Ser Leu Leu Lys Glu Leu Asn His Pro Asn Ile Val
        50                  55                  60
aag ctg ctg gat gtc att cac aca gaa aat aaa ctc tac ctg gtt ttt     240
Lys Leu Leu Asp Val Ile His Thr Glu Asn Lys Leu Tyr Leu Val Phe
65                  70                  75                  80
gaa ttt ctg cac caa gat ctc aag aaa ttc atg gat gcc tct gct ctc     288
```

124

```
Glu Phe Leu His Gln Asp Leu Lys Lys Phe Met Asp Ala Ser Ala Leu
                 85                  90                  95
act ggc att cct ctt ccc ctc atc aag agc tat ctg ttc cag ctg ctc          336
Thr Gly Ile Pro Leu Pro Leu Ile Lys Ser Tyr Leu Phe Gln Leu Leu
                100                 105                 110
cag ggc cta gct ttc tgc cat tct cat cgg gtc ctc cac cga gac ctt          384
Gln Gly Leu Ala Phe Cys His Ser His Arg Val Leu His Arg Asp Leu
            115                 120                 125
aaa cct cag aat ctg ctt att aac aca gag ggg gcc atc aag cta gca          432
Lys Pro Gln Asn Leu Leu Ile Asn Thr Glu Gly Ala Ile Lys Leu Ala
        130                 135                 140
gac ttt gga cta gcc aga gct ttt gga gtc cct gtt cgt act tac acc          480
Asp Phe Gly Leu Ala Arg Ala Phe Gly Val Pro Val Arg Thr Tyr Thr
145                 150                 155                 160
cat gag gtg gtg acc ctg tgg tac cga gct cct gaa atc ctc ctg ggc          528
His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu Gly
                165                 170                 175
tcg aaa tat tat tcc aca gct gtg gac atc tgg agc ctg ggc tgc atc          576
Ser Lys Tyr Tyr Ser Thr Ala Val Asp Ile Trp Ser Leu Gly Cys Ile
                180                 185                 190
ttt gct gag atg gtg act cgc cgg gcc ctg ttc cct gga gat tct gag          624
Phe Ala Glu Met Val Thr Arg Arg Ala Leu Phe Pro Gly Asp Ser Glu
            195                 200                 205
att gac cag ctc ttc cgg atc ttt cgg act ctg ggg acc cca gat gag          672
Ile Asp Gln Leu Phe Arg Ile Phe Arg Thr Leu Gly Thr Pro Asp Glu
        210                 215                 220
gtg gtg tgg cca gga gtt act tct atg cct gat tac aag cca agt ttc          720
Val Val Trp Pro Gly Val Thr Ser Met Pro Asp Tyr Lys Pro Ser Phe
225                 230                 235                 240
ccc aag tgg gcc cgg caa gat ttt agt aaa gtt gta cct ccc ctg gat          768
Pro Lys Trp Ala Arg Gln Asp Phe Ser Lys Val Val Pro Pro Leu Asp
                245                 250                 255
gaa gat gga cgg agc ttg tta tcg caa atg ctg cac tac gac cct aac          816
Glu Asp Gly Arg Ser Leu Leu Ser Gln Met Leu His Tyr Asp Pro Asn
                260                 265                 270
aag cgg att tcg gcc aag gca gcc ctg gct cac cct ttc ttc cag gat          864
Lys Arg Ile Ser Ala Lys Ala Ala Leu Ala His Pro Phe Phe Gln Asp
            275                 280                 285
gtg acc aag cca gta ccc cat ctt cga ctc tgg gat cca ccg gtc gcc          912
Val Thr Lys Pro Val Pro His Leu Arg Leu Trp Asp Pro Pro Val Ala
        290                 295                 300
acc atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc          960
Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile
305                 310                 315                 320
ctg gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc         1008
Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser
                325                 330                 335
ggc gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc         1056
Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe
                340                 345                 350
atc tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc         1104
Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr
            355                 360                 365
acc ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg         1152
Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met
        370                 375                 380
aag cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag         1200
Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln
385                 390                 395                 400
gag cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc         1248
Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala
                405                 410                 415
gag gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag         1296
```

125

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Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys
        420                 425                 430
ggc atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag      1344
Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu
        435                 440                 445
tac aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag      1392
Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys
    450                 455                 460
aac ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc      1440
Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly
465                 470                 475                 480
agc gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac      1488
Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp
                485                 490                 495
ggc ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc      1536
Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala
            500                 505                 510
ctg agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag      1584
Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu
        515                 520                 525
ttc gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag      1632
Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
    530                 535                 540
taa                                                                   1635


<210>  113

<211>  544

<212>  PRT

<213>  Artificial Sequence


<220>

<223>  CDK2-EGFP fusion


<400>  113
Met Glu Asn Phe Gln Lys Val Glu Lys Ile Gly Glu Gly Thr Tyr Gly
1               5                   10                  15
Val Val Tyr Lys Ala Arg Asn Lys Leu Thr Gly Glu Val Val Ala Leu
            20                  25                  30
Lys Lys Ile Arg Leu Asp Thr Glu Thr Glu Gly Val Pro Ser Thr Ala
        35                  40                  45
Ile Arg Glu Ile Ser Leu Leu Lys Glu Leu Asn His Pro Asn Ile Val
    50                  55                  60
Lys Leu Leu Asp Val Ile His Thr Glu Asn Lys Leu Tyr Leu Val Phe
65                  70                  75                  80
Glu Phe Leu His Gln Asp Leu Lys Lys Phe Met Asp Ala Ser Ala Leu
                85                  90                  95
Thr Gly Ile Pro Leu Pro Leu Ile Lys Ser Tyr Leu Phe Gln Leu Leu
            100                 105                 110
Gln Gly Leu Ala Phe Cys His Ser His Arg Val Leu His Arg Asp Leu
        115                 120                 125
Lys Pro Gln Asn Leu Leu Ile Asn Thr Glu Gly Ala Ile Lys Leu Ala
    130                 135                 140
Asp Phe Gly Leu Ala Arg Ala Phe Gly Val Pro Val Arg Thr Tyr Thr
145                 150                 155                 160
His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu Gly
```

126

```
                    165                    170                    175
Ser Lys Tyr Tyr Ser Thr Ala Val Asp Ile Trp Ser Leu Gly Cys Ile
            180                    185                    190
Phe Ala Glu Met Val Thr Arg Arg Ala Leu Phe Pro Gly Asp Ser Glu
        195                    200                    205
Ile Asp Gln Leu Phe Arg Ile Phe Arg Thr Leu Gly Thr Pro Asp Glu
    210                    215                    220
Val Val Trp Pro Gly Val Thr Ser Met Pro Asp Tyr Lys Pro Ser Phe
225                    230                    235                    240
Pro Lys Trp Ala Arg Gln Asp Phe Ser Lys Val Val Pro Pro Leu Asp
                245                    250                    255
Glu Asp Gly Arg Ser Leu Leu Ser Gln Met Leu His Tyr Asp Pro Asn
            260                    265                    270
Lys Arg Ile Ser Ala Lys Ala Ala Leu Ala His Pro Phe Phe Gln Asp
        275                    280                    285
Val Thr Lys Pro Val Pro His Leu Arg Leu Trp Asp Pro Pro Val Ala
    290                    295                    300
Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile
305                    310                    315                    320
Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser
                325                    330                    335
Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe
            340                    345                    350
Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr
        355                    360                    365
Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met
    370                    375                    380
Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln
385                    390                    395                    400
Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala
                405                    410                    415
Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys
            420                    425                    430
Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu
        435                    440                    445
Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys
    450                    455                    460
Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly
465                    470                    475                    480
Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp
                485                    490                    495
Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala
            500                    505                    510
Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu
        515                    520                    525
Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
    530                    535                    540
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<210> 114

<211> 1635

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-CDK2 fusion

127

<220>

<221>   CDS

<222>   (1)..(1632)

<400>   114

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atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg      48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc      96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc      144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc      192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag      240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag      288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag      336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100                 105                 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc      384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
            115                 120                 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac      432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                 135                 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac      480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc      528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc      576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
                180                 185                 190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg      624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
            195                 200                 205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc      672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
        210                 215                 220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc      720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
gga ctc aga tct cga gcc atg gag aac ttc caa aag gtg gaa aag atc      768
Gly Leu Arg Ser Arg Ala Met Glu Asn Phe Gln Lys Val Glu Lys Ile
                245                 250                 255
gga gag ggc acg tac gga gtt gtg tac aaa gcc aga aac aag ttg acg      816
Gly Glu Gly Thr Tyr Gly Val Val Tyr Lys Ala Arg Asn Lys Leu Thr
                260                 265                 270
gga gag gtg gtg gcg ctt aag aaa atc cgc ctg gac act gag act gag      864
Gly Glu Val Val Ala Leu Lys Lys Ile Arg Leu Asp Thr Glu Thr Glu
            275                 280                 285
```

128

```
ggt gtg ccc agt act gcc atc cga gag atc tct ctg ctt aag gag ctt        912
Gly Val Pro Ser Thr Ala Ile Arg Glu Ile Ser Leu Leu Lys Glu Leu
    290                     295                 300
aac cat cct aat att gtc aag ctg ctg gat gtc att cac aca gaa aat        960
Asn His Pro Asn Ile Val Lys Leu Leu Asp Val Ile His Thr Glu Asn
305                     310                 315                 320
aaa ctc tac ctg gtt ttt gaa ttt ctg cac caa gat ctc aag aaa ttc       1008
Lys Leu Tyr Leu Val Phe Glu Phe Leu His Gln Asp Leu Lys Lys Phe
                325                 330                 335
atg gat gcc tct gct ctc act ggc att cct ctt ccc ctc atc aag agc       1056
Met Asp Ala Ser Ala Leu Thr Gly Ile Pro Leu Pro Leu Ile Lys Ser
                340                 345                 350
tat ctg ttc cag ctg ctc cag ggc cta gct ttc tgc cat tct cat cgg      1104
Tyr Leu Phe Gln Leu Leu Gln Gly Leu Ala Phe Cys His Ser His Arg
                355                 360                 365
gtc ctc cac cga gac ctt aaa cct cag aat ctg ctt att aac aca gag      1152
Val Leu His Arg Asp Leu Lys Pro Gln Asn Leu Leu Ile Asn Thr Glu
        370                 375                 380
ggg gcc atc aag cta gca gac ttt gga cta gcc aga gct ttt gga gtc      1200
Gly Ala Ile Lys Leu Ala Asp Phe Gly Leu Ala Arg Ala Phe Gly Val
385                     390                 395                 400
cct gtt cgt act tac acc cat gag gtg gtg acc ctg tgg tac cga gct      1248
Pro Val Arg Thr Tyr Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala
                405                 410                 415
cct gaa atc ctc ctg ggc tcg aaa tat tat tcc aca gct gtg gac atc      1296
Pro Glu Ile Leu Leu Gly Ser Lys Tyr Tyr Ser Thr Ala Val Asp Ile
                420                 425                 430
tgg agc ctg ggc tgc atc ttt gct gag atg gtg act cgc cgg gcc ctg      1344
Trp Ser Leu Gly Cys Ile Phe Ala Glu Met Val Thr Arg Arg Ala Leu
                435                 440                 445
ttc cct gga gat tct gag att gac cag ctc ttc cgg atc ttt cgg act      1392
Phe Pro Gly Asp Ser Glu Ile Asp Gln Leu Phe Arg Ile Phe Arg Thr
        450                 455                 460
ctg ggg acc cca gat gag gtg gtg tgg cca gga gtt act tct atg cct      1440
Leu Gly Thr Pro Asp Glu Val Val Trp Pro Gly Val Thr Ser Met Pro
465                     470                 475                 480
gat tac aag cca agt ttc ccc aag tgg gcc cgg caa gat ttt agt aaa      1488
Asp Tyr Lys Pro Ser Phe Pro Lys Trp Ala Arg Gln Asp Phe Ser Lys
                485                 490                 495
gtt gta cct ccc ctg gat gaa gat gga cgg agc ttg tta tcg caa atg      1536
Val Val Pro Pro Leu Asp Glu Asp Gly Arg Ser Leu Leu Ser Gln Met
                500                 505                 510
ctg cac tac gac cct aac aag cgg att tcg gcc aag gca gcc ctg gct      1584
Leu His Tyr Asp Pro Asn Lys Arg Ile Ser Ala Lys Ala Ala Leu Ala
                515                 520                 525
cac cct ttc ttc cag gat gtg acc aag cca gta ccc cat ctt cga ctc      1632
His Pro Phe Phe Gln Asp Val Thr Lys Pro Val Pro His Leu Arg Leu
        530                 535                 540
tga                                                                   1635
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<210> 115

<211> 544

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-CDK2 fusion

129

<400> 115

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Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1           5                   10              15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20              25              30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35              40              45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50              55              60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65              70              75              80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
            85              90              95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100             105             110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
    115             120             125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130             135             140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145             150             155             160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
            165             170             175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
        180             185             190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195             200             205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210             215             220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225             230             235             240
Gly Leu Arg Ser Arg Ala Met Glu Asn Phe Gln Lys Val Glu Lys Ile
            245             250             255
Gly Glu Gly Thr Tyr Gly Val Val Tyr Lys Ala Arg Asn Lys Leu Thr
            260             265             270
Gly Glu Val Val Ala Leu Lys Lys Ile Arg Leu Asp Thr Glu Thr Glu
        275             280             285
Gly Val Pro Ser Thr Ala Ile Arg Glu Ile Ser Leu Leu Lys Glu Leu
        290             295             300
Asn His Pro Asn Ile Val Lys Leu Leu Asp Val Ile His Thr Glu Asn
305             310             315             320
Lys Leu Tyr Leu Val Phe Glu Phe Leu His Gln Asp Leu Lys Lys Phe
            325             330             335
Met Asp Ala Ser Ala Leu Thr Gly Ile Pro Leu Pro Leu Ile Lys Ser
            340             345             350
Tyr Leu Phe Gln Leu Leu Gln Gly Leu Ala Phe Cys His Ser His Arg
            355             360             365
Val Leu His Arg Asp Leu Lys Pro Gln Asn Leu Leu Ile Asn Thr Glu
        370             375             380
Gly Ala Ile Lys Leu Ala Asp Phe Gly Leu Ala Arg Ala Phe Gly Val
385             390             395             400
Pro Val Arg Thr Tyr Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala
            405             410             415
Pro Glu Ile Leu Leu Gly Ser Lys Tyr Tyr Ser Thr Ala Val Asp Ile
            420             425             430
Trp Ser Leu Gly Cys Ile Phe Ala Glu Met Val Thr Arg Arg Ala Leu
            435             440             445
Phe Pro Gly Asp Ser Glu Ile Asp Gln Leu Phe Arg Ile Phe Arg Thr
    450             455             460
Leu Gly Thr Pro Asp Glu Val Val Trp Pro Gly Val Thr Ser Met Pro
465             470             475             480
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130

```
Asp Tyr Lys Pro Ser Phe Pro Lys Trp Ala Arg Gln Asp Phe Ser Lys
            485             490                 495
Val Val Pro Pro Leu Asp Glu Asp Gly Arg Ser Leu Leu Ser Gln Met
            500             505                 510
Leu His Tyr Asp Pro Asn Lys Arg Ile Ser Ala Lys Ala Ala Leu Ala
            515             520                 525
His Pro Phe Phe Gln Asp Val Thr Lys Pro Val Pro His Leu Arg Leu
    530             535                 540
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<210> 116

<211> 2532

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-PTP fusion

<220>

<221> CDS

<222> (1)..(2529)

<400> 116

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atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg      48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc      96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc     144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc     192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag     240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag     288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag     336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100                 105                 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc     384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
            115                 120                 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac     432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
            130                 135                 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac     480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
```

131

```
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc      528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
            165                     170                 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc      576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                     185                 190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg      624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
            195                     200                 205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc      672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                     215                 220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc      720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                     230                 235                 240
gga ctc aga tct cga gag atg ctg tcc cgt ggg tgg ttt cac cga gac      768
Gly Leu Arg Ser Arg Glu Met Leu Ser Arg Gly Trp Phe His Arg Asp
                245                     250                 255
ctc agt ggg ctg gat gca gag acc ctg ctc aag ggc cga ggt gtc cac      816
Leu Ser Gly Leu Asp Ala Glu Thr Leu Leu Lys Gly Arg Gly Val His
            260                     265                 270
ggt agc ttc ctg gct cgg ccc agt cgc aag aac cag ggt gac ttc tcg      864
Gly Ser Phe Leu Ala Arg Pro Ser Arg Lys Asn Gln Gly Asp Phe Ser
            275                     280                 285
ctc tcc gtc agg gtg ggg gat cag gtg acc cat att cgg atc cag aac      912
Leu Ser Val Arg Val Gly Asp Gln Val Thr His Ile Arg Ile Gln Asn
    290                     295                 300
tca ggg gat ttc tat gac ctg tat gga ggg gag aag ttt gcg act ctg      960
Ser Gly Asp Phe Tyr Asp Leu Tyr Gly Gly Glu Lys Phe Ala Thr Leu
305                     310                 315                 320
aca gag ctg gtg gag tac tac act cag cag cag ggt gtc ctg cag gac     1008
Thr Glu Leu Val Glu Tyr Tyr Thr Gln Gln Gln Gly Val Leu Gln Asp
                325                     330                 335
cgc gac ggc acc atc atc cac ctc aag tac ccg ctg aac tgc tcc gat     1056
Arg Asp Gly Thr Ile Ile His Leu Lys Tyr Pro Leu Asn Cys Ser Asp
            340                     345                 350
ccc act agt gag agg tgg tac cat ggc cac atg tct ggc ggg cag gca     1104
Pro Thr Ser Glu Arg Trp Tyr His Gly His Met Ser Gly Gly Gln Ala
            355                     360                 365
gag acg ctg ctg cag gcc aag ggc gag ccc tgg acg ttt ctt gtg cgt     1152
Glu Thr Leu Leu Gln Ala Lys Gly Glu Pro Trp Thr Phe Leu Val Arg
            370                     375                 380
gag agc ctc agc cag cct gga gac ttc gtg ctt tct gtg ctc agt gac     1200
Glu Ser Leu Ser Gln Pro Gly Asp Phe Val Leu Ser Val Leu Ser Asp
385                     390                     395                 400
cag ccc aag gct ggc cca ggc tcc ccg ctc agg gtc acc cac atc aag     1248
Gln Pro Lys Ala Gly Pro Gly Ser Pro Leu Arg Val Thr His Ile Lys
                405                     410                 415
gtc atg tgc gag ggt gga cgc tac aca gtg ggt ggt ttg gag acc ttc     1296
Val Met Cys Glu Gly Gly Arg Tyr Thr Val Gly Gly Leu Glu Thr Phe
            420                     425                 430
gac agc ctc acg gac ctg gta gag cat ttc aag aag acg ggg att gag     1344
Asp Ser Leu Thr Asp Leu Val Glu His Phe Lys Lys Thr Gly Ile Glu
            435                     440                 445
gag gcc tca ggc gcc ttt gtc tac ctg cgg cag ccg tac tat gcc acg     1392
Glu Ala Ser Gly Ala Phe Val Tyr Leu Arg Gln Pro Tyr Tyr Ala Thr
    450                     455                 460
agg gtg aat gcg gct gac att gag aac cga gtg ttg gaa ctg aac aag     1440
Arg Val Asn Ala Ala Asp Ile Glu Asn Arg Val Leu Glu Leu Asn Lys
465                     470                     475                 480
aag cag gag tcc gag gat aca gcc aag gct ggc ttc tgg gag gag ttt     1488
Lys Gln Glu Ser Glu Asp Thr Ala Lys Ala Gly Phe Trp Glu Glu Phe
                485                     490                 495
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132

```
gag agt ttg cag aag cag gag gtg aag aac ttg cac cag cgt ctg gaa      1536
Glu Ser Leu Gln Lys Gln Glu Val Lys Asn Leu His Gln Arg Leu Glu
            500                 505                 510
ggg cag cgg cca gag aac aag ggc aag aac cgc tac aag aac att ctc      1584
Gly Gln Arg Pro Glu Asn Lys Gly Lys Asn Arg Tyr Lys Asn Ile Leu
            515                 520                 525
ccc ttt gac cac agc cga gtg atc ctg cag gga cgg gac agt aac atc      1632
Pro Phe Asp His Ser Arg Val Ile Leu Gln Gly Arg Asp Ser Asn Ile
            530                 535                 540
ccc ggg tcc gac tac atc aat gcc aac tac atc aag aac cag ctg cta      1680
Pro Gly Ser Asp Tyr Ile Asn Ala Asn Tyr Ile Lys Asn Gln Leu Leu
545                 550                 555                 560
ggc cct gat gag aac gct aag acc tac atc gcc agc cag ggc tgt ctg      1728
Gly Pro Asp Glu Asn Ala Lys Thr Tyr Ile Ala Ser Gln Gly Cys Leu
            565                 570                 575
gag gcc acg gtc aat gac ttc tgg cag atg gcg tgg cag gag aac agc      1776
Glu Ala Thr Val Asn Asp Phe Trp Gln Met Ala Trp Gln Glu Asn Ser
            580                 585                 590
cgt gtc atc gtc atg acc acc cga gag gtg gag aaa ggc cgg aac aaa      1824
Arg Val Ile Val Met Thr Thr Arg Glu Val Glu Lys Gly Arg Asn Lys
            595                 600                 605
tgc gtc cca tac tgg ccc gag gtg ggc atg cag cgt gct tat ggg ccc      1872
Cys Val Pro Tyr Trp Pro Glu Val Gly Met Gln Arg Ala Tyr Gly Pro
            610                 615                 620
tac tct gtg acc aac tgc ggg gag cat gac aca acc gaa tac aaa ctc      1920
Tyr Ser Val Thr Asn Cys Gly Glu His Asp Thr Thr Glu Tyr Lys Leu
625                 630                 635                 640
cgt acc tta cag gtc tcc ccg ctg gac aat gga gac ctg att cgg gag      1968
Arg Thr Leu Gln Val Ser Pro Leu Asp Asn Gly Asp Leu Ile Arg Glu
            645                 650                 655
atc tgg cat tac cag tac ctg agc tgg ccc gac cat ggg gtc ccc agt      2016
Ile Trp His Tyr Gln Tyr Leu Ser Trp Pro Asp His Gly Val Pro Ser
            660                 665                 670
gag cct ggg ggt gtc ctc agc ttc ctg gac cag atc aac cag cgg cag      2064
Glu Pro Gly Gly Val Leu Ser Phe Leu Asp Gln Ile Asn Gln Arg Gln
            675                 680                 685
gaa agt ctg cct cac gca ggg ccc atc atc gtg cac tgc agc gcc ggc      2112
Glu Ser Leu Pro His Ala Gly Pro Ile Ile Val His Cys Ser Ala Gly
            690                 695                 700
atc ggc cgc aca ggc acc atc att gtc atc gac atg ctc atg gag aac      2160
Ile Gly Arg Thr Gly Thr Ile Ile Val Ile Asp Met Leu Met Glu Asn
705                 710                 715                 720
atc tcc acc aag ggc ctg gac tgt gac att gac atc cag aag acc atc      2208
Ile Ser Thr Lys Gly Leu Asp Cys Asp Ile Asp Ile Gln Lys Thr Ile
            725                 730                 735
cag atg gtg cgg gcg cag cgc tcg ggc atg gtg cag acg gag gcg cag      2256
Gln Met Val Arg Ala Gln Arg Ser Gly Met Val Gln Thr Glu Ala Gln
            740                 745                 750
tac aag ttc atc tac gtg gcc atc gcc cag ttc att gaa acc act aag      2304
Tyr Lys Phe Ile Tyr Val Ala Ile Ala Gln Phe Ile Glu Thr Thr Lys
            755                 760                 765
aag aag ctg gag gtc ctg cag tcg cag aag ggc cag gag tcg gag tac      2352
Lys Lys Leu Glu Val Leu Gln Ser Gln Lys Gly Gln Glu Ser Glu Tyr
770                 775                 780
ggg aac atc acc tat ccc cca gcc atg aag aat gcc cat gcc aag gcc      2400
Gly Asn Ile Thr Tyr Pro Pro Ala Met Lys Asn Ala His Ala Lys Ala
785                 790                 795                 800
tcc cgc acc tcg tcc aaa cac aag gag gat gtg tat gag aac ctg cac      2448
Ser Arg Thr Ser Ser Lys His Lys Glu Asp Val Tyr Glu Asn Leu His
            805                 810                 815
act aag aac aag agg gag gag aaa gtg aag aag cag cgg tca gca gac      2496
Thr Lys Asn Lys Arg Glu Glu Lys Val Lys Lys Gln Arg Ser Ala Asp
            820                 825                 830
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aag gag aag agc aag ggt tcc ctc aag agg aag tga                    2532
Lys Glu Lys Ser Lys Gly Ser Leu Lys Arg Lys
        835                     840


<210>   117

<211>   843

<212>   PRT

<213>   Artificial Sequence

<220>

<223>   EGFP-PTP fusion


<400>   117
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20                  25                  30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35                  40                  45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50                  55                  60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65              70                  75                  80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100                 105                 110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115                 120                 125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130                 135                 140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195                 200                 205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                 215                 220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
Gly Leu Arg Ser Arg Glu Met Leu Ser Arg Gly Trp Phe His Arg Asp
                245                 250                 255
Leu Ser Gly Leu Asp Ala Glu Thr Leu Leu Lys Gly Arg Gly Val His
            260                 265                 270
Gly Ser Phe Leu Ala Arg Pro Ser Arg Lys Asn Gln Gly Asp Phe Ser
        275                 280                 285
Leu Ser Val Arg Val Gly Asp Gln Val Thr His Ile Arg Ile Gln Asn
    290                 295                 300
Ser Gly Asp Phe Tyr Asp Leu Tyr Gly Gly Glu Lys Phe Ala Thr Leu
305                 310                 315                 320
Thr Glu Leu Val Glu Tyr Tyr Thr Gln Gln Gln Gly Val Leu Gln Asp
                325                 330                 335
Arg Asp Gly Thr Ile Ile His Leu Lys Tyr Pro Leu Asn Cys Ser Asp
            340                 345                 350
```

134

```
Pro Thr Ser Glu Arg Trp Tyr His Gly His Met Ser Gly Gly Gln Ala
        355                 360                 365
Glu Thr Leu Leu Gln Ala Lys Gly Glu Pro Trp Thr Phe Leu Val Arg
    370                 375                 380
Glu Ser Leu Ser Gln Pro Gly Asp Phe Val Leu Ser Val Leu Ser Asp
385                 390                 395                 400
Gln Pro Lys Ala Gly Pro Gly Ser Pro Leu Arg Val Thr His Ile Lys
            405                 410                 415
Val Met Cys Glu Gly Gly Arg Tyr Thr Val Gly Gly Leu Glu Thr Phe
            420                 425                 430
Asp Ser Leu Thr Asp Leu Val Glu His Phe Lys Lys Thr Gly Ile Glu
        435                 440                 445
Glu Ala Ser Gly Ala Phe Val Tyr Leu Arg Gln Pro Tyr Tyr Ala Thr
    450                 455                 460
Arg Val Asn Ala Ala Asp Ile Glu Asn Arg Val Leu Glu Leu Asn Lys
465                 470                 475                 480
Lys Gln Glu Ser Glu Asp Thr Ala Lys Ala Gly Phe Trp Glu Glu Phe
            485                 490                 495
Glu Ser Leu Gln Lys Gln Glu Val Lys Asn Leu His Gln Arg Leu Glu
        500                 505                 510
Gly Gln Arg Pro Glu Asn Lys Gly Lys Asn Arg Tyr Lys Asn Ile Leu
        515                 520                 525
Pro Phe Asp His Ser Arg Val Ile Leu Gln Gly Arg Asp Ser Asn Ile
    530                 535                 540
Pro Gly Ser Asp Tyr Ile Asn Ala Asn Tyr Ile Lys Asn Gln Leu Leu
545                 550                 555                 560
Gly Pro Asp Glu Asn Ala Lys Thr Tyr Ile Ala Ser Gln Gly Cys Leu
            565                 570                 575
Glu Ala Thr Val Asn Asp Phe Trp Gln Met Ala Trp Gln Glu Asn Ser
        580                 585                 590
Arg Val Ile Val Met Thr Thr Arg Glu Val Glu Lys Gly Arg Asn Lys
        595                 600                 605
Cys Val Pro Tyr Trp Pro Glu Val Gly Met Gln Arg Ala Tyr Gly Pro
    610                 615                 620
Tyr Ser Val Thr Asn Cys Gly Glu His Asp Thr Thr Glu Tyr Lys Leu
625                 630                 635                 640
Arg Thr Leu Gln Val Ser Pro Leu Asp Asn Gly Asp Leu Ile Arg Glu
            645                 650                 655
Ile Trp His Tyr Gln Tyr Leu Ser Trp Pro Asp His Gly Val Pro Ser
            660                 665                 670
Glu Pro Gly Gly Val Leu Ser Phe Leu Asp Gln Ile Asn Gln Arg Gln
        675                 680                 685
Glu Ser Leu Pro His Ala Gly Pro Ile Ile Val His Cys Ser Ala Gly
        690                 695                 700
Ile Gly Arg Thr Gly Thr Ile Ile Val Ile Asp Met Leu Met Glu Asn
705                 710                 715                 720
Ile Ser Thr Lys Gly Leu Asp Cys Asp Ile Asp Ile Gln Lys Thr Ile
            725                 730                 735
Gln Met Val Arg Ala Gln Arg Ser Gly Met Val Gln Thr Glu Ala Gln
            740                 745                 750
Tyr Lys Phe Ile Tyr Val Ala Ile Ala Gln Phe Ile Glu Thr Thr Lys
        755                 760                 765
Lys Lys Leu Glu Val Leu Gln Ser Gln Lys Gly Gln Glu Ser Glu Tyr
    770                 775                 780
Gly Asn Ile Thr Tyr Pro Pro Ala Met Lys Asn Ala His Ala Lys Ala
785                 790                 795                 800
Ser Arg Thr Ser Ser Lys His Lys Glu Asp Val Tyr Glu Asn Leu His
            805                 810                 815

Thr Lys Asn Lys Arg Glu Glu Lys Val Lys Lys Gln Arg Ser Ala Asp
        820                 825                 830
Lys Glu Lys Ser Lys Gly Ser Leu Lys Arg Lys
    835                 840
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135

<210> 118

<211> 2562

<212> DNA

<213> Artificial Sequence

<220>

<223> PTP-EGFP fusion

<220>

<221> CDS

<222> (1)..(2559)

<400> 118

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atg ctg tcc cgt ggg tgg ttt cac cga gac ctc agt ggg ctg gat gca      48
Met Leu Ser Arg Gly Trp Phe His Arg Asp Leu Ser Gly Leu Asp Ala
1               5                   10                  15

gag acc ctg ctc aag ggc cga ggt gtc cac ggt agc ttc ctg gct cgg      96
Glu Thr Leu Leu Lys Gly Arg Gly Val His Gly Ser Phe Leu Ala Arg
                20                  25                  30

ccc agt cgc aag aac cag ggt gac ttc tcg ctc tcc gtc agg gtg ggg     144
Pro Ser Arg Lys Asn Gln Gly Asp Phe Ser Leu Ser Val Arg Val Gly
            35                  40                  45

gat cag gtg acc cat att cgg atc cag aac tca ggg gat ttc tat gac     192
Asp Gln Val Thr His Ile Arg Ile Gln Asn Ser Gly Asp Phe Tyr Asp
        50                  55                  60

ctg tat gga ggg gag aag ttt gcg act ctg aca gag ctg gtg gag tac     240
Leu Tyr Gly Gly Glu Lys Phe Ala Thr Leu Thr Glu Leu Val Glu Tyr
65                  70                  75                  80

tac act cag cag cag ggt gtc ctg cag gac cgc gac ggc acc atc atc     288
Tyr Thr Gln Gln Gln Gly Val Leu Gln Asp Arg Asp Gly Thr Ile Ile
                85                  90                  95

cac ctc aag tac ccg ctg aac tgc tcc gat ccc act agt gag agg tgg     336
His Leu Lys Tyr Pro Leu Asn Cys Ser Asp Pro Thr Ser Glu Arg Trp
            100                 105                 110

tac cat ggc cac atg tct ggc ggg cag gca gag acg ctg ctg cag gcc     384
Tyr His Gly His Met Ser Gly Gly Gln Ala Glu Thr Leu Leu Gln Ala
        115                 120                 125

aag ggc gag ccc tgg acg ttt ctt gtg cgt gag agc ctc agc cag cct     432
Lys Gly Glu Pro Trp Thr Phe Leu Val Arg Glu Ser Leu Ser Gln Pro
    130                 135                 140

gga gac ttc gtg ctt tct gtg ctc agt gac cag ccc aag gct ggc cca     480
Gly Asp Phe Val Leu Ser Val Leu Ser Asp Gln Pro Lys Ala Gly Pro
145                 150                 155                 160

ggc tcc ccg ctc agg gtc acc cac atc aag gtc atg tgc gag ggt gga     528
Gly Ser Pro Leu Arg Val Thr His Ile Lys Val Met Cys Glu Gly Gly
                165                 170                 175

cgc tac aca gtg ggt ggt ttg gag acc ttc gac agc ctc acg gac ctg     576
Arg Tyr Thr Val Gly Gly Leu Glu Thr Phe Asp Ser Leu Thr Asp Leu
            180                 185                 190

gta gag cat ttc aag aag acg ggg att gag gag gcc tca ggc gcc ttt     624
Val Glu His Phe Lys Lys Thr Gly Ile Glu Glu Ala Ser Gly Ala Phe
```

136

```
        195                   200                   205
gtc tac ctg cgg cag ccg tac tat gcc acg agg gtg aat gcg gct gac      672
Val Tyr Leu Arg Gln Pro Tyr Tyr Ala Thr Arg Val Asn Ala Ala Asp
    210                   215                   220
att gag aac cga gtg ttg gaa ctg aac aag aag cag gag tcc gag gat      720
Ile Glu Asn Arg Val Leu Glu Leu Asn Lys Lys Gln Glu Ser Glu Asp
225                   230                   235                   240
aca gcc aag gct ggc ttc tgg gag gag ttt gag agt ttg cag aag cag      768
Thr Ala Lys Ala Gly Phe Trp Glu Glu Phe Glu Ser Leu Gln Lys Gln
                245                   250                   255
gag gtg aag aac ttg cac cag cgt ctg gaa ggg cag cgg cca gag aac      816
Glu Val Lys Asn Leu His Gln Arg Leu Glu Gly Gln Arg Pro Glu Asn
            260                   265                   270
aag ggc aag aac cgc tac aag aac att ctc ccc ttt gac cac agc cga      864
Lys Gly Lys Asn Arg Tyr Lys Asn Ile Leu Pro Phe Asp His Ser Arg
        275                   280                   285
gtg atc ctg cag gga cgg gac agt aac atc ccc ggg tcc gac tac atc      912
Val Ile Leu Gln Gly Arg Asp Ser Asn Ile Pro Gly Ser Asp Tyr Ile
    290                   295                   300
aat gcc aac tac atc aag aac cag ctg cta ggc cct gat gag aac gct      960
Asn Ala Asn Tyr Ile Lys Asn Gln Leu Leu Gly Pro Asp Glu Asn Ala
305                   310                   315                   320
aag acc tac atc gcc agc cag ggc tgt ctg gag gcc acg gtc aat gac     1008
Lys Thr Tyr Ile Ala Ser Gln Gly Cys Leu Glu Ala Thr Val Asn Asp
                325                   330                   335
ttc tgg cag atg gcg tgg cag gag aac agc cgt gtc atc gtc atg acc     1056
Phe Trp Gln Met Ala Trp Gln Glu Asn Ser Arg Val Ile Val Met Thr
                340                   345                   350
acc cga gag gtg gag aaa ggc cgg aac aaa tgc gtc cca tac tgg ccc     1104
Thr Arg Glu Val Glu Lys Gly Arg Asn Lys Cys Val Pro Tyr Trp Pro
        355                   360                   365
gag gtg ggc atg cag cgt gct tat ggg ccc tac tct gtg acc aac tgc     1152
Glu Val Gly Met Gln Arg Ala Tyr Gly Pro Tyr Ser Val Thr Asn Cys
    370                   375                   380
ggg gag cat gac aca acc gaa tac aaa ctc cgt acc tta cag gtc tcc     1200
Gly Glu His Asp Thr Thr Glu Tyr Lys Leu Arg Thr Leu Gln Val Ser
385                   390                   395                   400
ccg ctg gac aat gga gac ctg att cgg gag atc tgg cat tac cag tac     1248
Pro Leu Asp Asn Gly Asp Leu Ile Arg Glu Ile Trp His Tyr Gln Tyr
                405                   410                   415
ctg agc tgg ccc gac cat ggg gtc ccc agt gag cct ggg ggt gtc ctc     1296
Leu Ser Trp Pro Asp His Gly Val Pro Ser Glu Pro Gly Gly Val Leu
                420                   425                   430
agc ttc ctg gac cag atc aac cag cgg cag gaa agt ctg cct cac gca     1344
Ser Phe Leu Asp Gln Ile Asn Gln Arg Gln Glu Ser Leu Pro His Ala
            435                   440                   445
ggg ccc atc atc gtg cac tgc agc gcc ggc atc ggc cgc aca ggc acc     1392
Gly Pro Ile Ile Val His Cys Ser Ala Gly Ile Gly Arg Thr Gly Thr
        450                   455                   460
atc att gtc atc gac atg ctc atg gag aac atc tcc acc aag ggc ctg     1440
Ile Ile Val Ile Asp Met Leu Met Glu Asn Ile Ser Thr Lys Gly Leu
465                   470                   475                   480
gac tgt gac att gac atc cag aag acc atc cag atg gtg cgg gcg cag     1488
Asp Cys Asp Ile Asp Ile Gln Lys Thr Ile Gln Met Val Arg Ala Gln
                485                   490                   495
cgc tcg ggc atg gtg cag acg gag gcg cag tac aag ttc atc tac gtg     1536
Arg Ser Gly Met Val Gln Thr Glu Ala Gln Tyr Lys Phe Ile Tyr Val
                500                   505                   510
gcc atc gcc cag ttc att gaa acc act aag aag aag ctg gag gtc ctg     1584
Ala Ile Ala Gln Phe Ile Glu Thr Thr Lys Lys Lys Leu Glu Val Leu
            515                   520                   525
cag tcg cag aag ggc cag gag tcg gag tac ggg aac atc acc tat ccc     1632
Gln Ser Gln Lys Gly Gln Glu Ser Glu Tyr Gly Asn Ile Thr Tyr Pro
```

137

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        530                    535                    540
cca gcc atg aag aat gcc cat gcc aag gcc tcc cgc acc tcg tcc aaa     1680
Pro Ala Met Lys Asn Ala His Ala Lys Ala Ser Arg Thr Ser Ser Lys
545                    550                    555                    560
cac aag gag gat gtg tat gag aac ctg cac act aag aac aag agg gag     1728
His Lys Glu Asp Val Tyr Glu Asn Leu His Thr Lys Asn Lys Arg Glu
                       565                    570                    575
gag aaa gtg aag aag cag cgg tca gca gac aag gag aag agc aag ggt     1776
Glu Lys Val Lys Lys Gln Arg Ser Ala Asp Lys Glu Lys Ser Lys Gly
            580                    585                    590
tcc ctc aag agg aag cga att ctg cag tcg acg gta ccg cgg gcc cgg     1824
Ser Leu Lys Arg Lys Arg Ile Leu Gln Ser Thr Val Pro Arg Ala Arg
            595                    600                    605
gat cca ccg gtc gcc acc atg gtg agc aag ggc gag gag ctg ttc acc     1872
Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr
            610                    615        .           620
ggg gtg gtg ccc atc ctg gtc gag ctg gac ggc gac gta aac ggc cac     1920
Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His
625                    630                    635                    640
aag ttc agc gtg tcc ggc gag ggc gag ggc gat gcc acc tac ggc aag     1968
Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys
            645                    650                    655
ctg acc ctg aag ttc atc tgc acc acc ggc aag ctg ccc gtg ccc tgg     2016
Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp
            660                    665                    670
ccc acc ctc gtg acc acc ctg acc tac ggc gtg cag tgc ttc agc cgc     2064
Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg
            675                    680                    685
tac ccc gac cac atg aag cag cac gac ttc ttc aag tcc gcc atg ccc     2112
Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro
            690                    695                    700
gaa ggc tac gtc cag gag cgc acc atc ttc ttc aag gac gac ggc aac     2160
Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn
705                    710                    715                    720
tac aag acc cgc gcc gag gtg aag ttc gag ggc gac acc ctg gtg aac     2208
Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn
            725                    730                    735 .       .
cgc atc gag ctg aag ggc atc gac ttc aag gag gac ggc aac atc ctg     2256
Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu
            740                    745                    750
ggg cac aag ctg gag tac aac tac aac agc cac aac gtc tat atc atg     2304
Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met
      .     755                    760                    765
gcc gac aag cag aag aac ggc atc aag gtg aac ttc aag atc cgc cac     2352
Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His
            770                    775                    780
aac atc gag gac ggc agc gtg cag ctc gcc gac cac tac cag cag aac     2400
Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn
785                    790                    795                    800
acc ccc atc ggc gac ggc ccc gtg ctg ctg ccc gac aac cac tac ctg     2448
Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu
            805                    810                    815
agc acc cag tcc gcc ctg agc aaa gac ccc aac gag aag cgc gat cac     2496
Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His
            820                    825                    830
atg gtc ctg ctg gag ttc gtg acc gcc gcc ggg atc act ctc ggc atg     2544
Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met
            835                    840                    845
gac gag ctg tac aag taa                                             2562
Asp Glu Leu Tyr Lys
            850
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138

<210> 119

<211> 853

<212> PRT

<213> Artificial Sequence

<220>

<223> PTP-EGFP fusion

<400> 119
Met Leu Ser Arg Gly Trp Phe His Arg Asp Leu Ser Gly Leu Asp Ala
1   5   10   15
Glu Thr Leu Leu Lys Gly Arg Gly Val His Gly Ser Phe Leu Ala Arg
            20   25   30
Pro Ser Arg Lys Asn Gln Gly Asp Phe Ser Leu Ser Val Arg Val Gly
        35   40   45
Asp Gln Val Thr His Ile Arg Ile Gln Asn Ser Gly Asp Phe Tyr Asp
    50   55   60
Leu Tyr Gly Gly Glu Lys Phe Ala Thr Leu Thr Glu Leu Val Glu Tyr
65   70   75   80
Tyr Thr Gln Gln Gln Gly Val Leu Gln Asp Arg Asp Gly Thr Ile Ile
                85   90   95
His Leu Lys Tyr Pro Leu Asn Cys Ser Asp Pro Thr Ser Glu Arg Trp
            100   105   110
Tyr His Gly His Met Ser Gly Gly Gln Ala Glu Thr Leu Leu Gln Ala
            115   120   125
Lys Gly Glu Pro Trp Thr Phe Leu Val Arg Glu Ser Leu Ser Gln Pro
        130   135   140
Gly Asp Phe Val Leu Ser Val Leu Ser Asp Gln Pro Lys Ala Gly Pro
145   150   155   160
Gly Ser Pro Leu Arg Val Thr His Ile Lys Val Met Cys Glu Gly Gly
            165   170   175
Arg Tyr Thr Val Gly Gly Leu Glu Thr Phe Asp Ser Leu Thr Asp Leu
            180   185   190
Val Glu His Phe Lys Lys Thr Gly Ile Glu Glu Ala Ser Gly Ala Phe
            195   200   205
Val Tyr Leu Arg Gln Pro Tyr Tyr Ala Thr Arg Val Asn Ala Ala Asp
        210   215   220
Ile Glu Asn Arg Val Leu Glu Leu Asn Lys Lys Gln Glu Ser Glu Asp
225   230   235   240
Thr Ala Lys Ala Gly Phe Trp Glu Glu Phe Glu Ser Leu Gln Lys Gln
                245   250   255
Glu Val Lys Asn Leu His Gln Arg Leu Glu Gly Gln Arg Pro Glu Asn
            260   265   270
Lys Gly Lys Asn Arg Tyr Lys Asn Ile Leu Pro Phe Asp His Ser Arg
        275   280   285
Val Ile Leu Gln Gly Arg Asp Ser Asn Ile Pro Gly Ser Asp Tyr Ile
    290   295   300
Asn Ala Asn Tyr Ile Lys Asn Gln Leu Leu Gly Pro Asp Glu Asn Ala
305   310   315   320
Lys Thr Tyr Ile Ala Ser Gln Gly Cys Leu Glu Ala Thr Val Asn Asp
                325   330   335
Phe Trp Gln Met Ala Trp Gln Glu Asn Ser Arg Val Ile Val Met Thr
            340   345   350
Thr Arg Glu Val Glu Lys Gly Arg Asn Lys Cys Val Pro Tyr Trp Pro
        355   360   365
Glu Val Gly Met Gln Arg Ala Tyr Gly Pro Tyr Ser Val Thr Asn Cys
        370   375   380

139

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Gly Glu His Asp Thr Thr Glu Tyr Lys Leu Arg Thr Leu Gln Val Ser
385             390                 395                 400
Pro Leu Asp Asn Gly Asp Leu Ile Arg Glu Ile Trp His Tyr Gln Tyr
            405                 410                 415
Leu Ser Trp Pro Asp His Gly Val Pro Ser Glu Pro Gly Gly Val Leu
            420                 425                 430
Ser Phe Leu Asp Gln Ile Asn Gln Arg Gln Glu Ser Leu Pro His Ala
            435                 440                 445
Gly Pro Ile Ile Val His Cys Ser Ala Gly Ile Gly Arg Thr Gly Thr
    450                 455                 460
Ile Ile Val Ile Asp Met Leu Met Glu Asn Ile Ser Thr Lys Gly Leu
465                 470                 475                 480
Asp Cys Asp Ile Asp Ile Gln Lys Thr Ile Gln Met Val Arg Ala Gln
            485                 490                 495
Arg Ser Gly Met Val Gln Thr Glu Ala Gln Tyr Lys Phe Ile Tyr Val
            500                 505                 510
Ala Ile Ala Gln Phe Ile Glu Thr Thr Lys Lys Lys Leu Glu Val Leu
    515                 520                 525
Gln Ser Gln Lys Gly Gln Glu Ser Glu Tyr Gly Asn Ile Thr Tyr Pro
    530                 535                 540
Pro Ala Met Lys Asn Ala His Ala Lys Ala Ser Arg Thr Ser Ser Lys
545                 550                 555                 560
His Lys Glu Asp Val Tyr Glu Asn Leu His Thr Lys Asn Lys Arg Glu
            565                 570                 575
Glu Lys Val Lys Lys Gln Arg Ser Ala Asp Lys Glu Lys Ser Lys Gly
            580                 585                 590
Ser Leu Lys Arg Lys Arg Ile Leu Gln Ser Thr Val Pro Arg Ala Arg
    595                 600                 605
Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr
    610                 615                 620
Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His
625                 630                 635                 640
Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys
            645                 650                 655
Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp
            660                 665                 670
Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg
    675                 680                 685
Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro
    690                 695                 700
Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn
705                 710                 715                 720
Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn
            725                 730                 735
Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu
            740                 745                 750
Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met
    755                 760                 765
Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His
    770                 775                 780
Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn
785                 790                 795                 800
Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu
            805                 810                 815
Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His
            820                 825                 830
Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met
            835                 840                 845
Asp Glu Leu Tyr Lys
    850
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140

<210> 120

<211> 2994

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-1kappaB-kinase fusion

<220>

<221> CDS

<222> (1)..(2991)


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<400> 120
atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg      48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc      96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc     144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc     192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag     240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag     288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag     336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100                 105                 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc     384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
            115                 120                 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac     432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                 135                 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac     480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc     528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc     576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
                180                 185                 190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg     624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
            195                 200                 205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc     672
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141

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Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
210             215                 220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc    720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
gga ctc aga tct cga gct caa gct tcg aat tcg acc atg gag cgg ccc    768
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Thr Met Glu Arg Pro
                245                 250                 255
ccg ggg ctg cgg ccg ggc gcg ggc ggg ccc tgg gag atg cgg gag cgg    816
Pro Gly Leu Arg Pro Gly Ala Gly Gly Pro Trp Glu Met Arg Glu Arg
                260                 265                 270
ctg ggc acc ggc ggc ttc ggg aac gtc tgt ctg tac cag cat cgg gaa    864
Leu Gly Thr Gly Gly Phe Gly Asn Val Cys Leu Tyr Gln His Arg Glu
                275                 280                 285
ctt gat ctc aaa ata gca att aag tct tgt cgc cta gag cta agt acc    912
Leu Asp Leu Lys Ile Ala Ile Lys Ser Cys Arg Leu Glu Leu Ser Thr
        290                 295                 300
aaa aac aga gaa cga tgg tgc cat gaa atc cag att atg aag aag ttg    960
Lys Asn Arg Glu Arg Trp Cys His Glu Ile Gln Ile Met Lys Lys Leu
305                 310                 315                 320
aac cat gcc aat gtt gta aag gcc tgt gat gtt cct gaa gaa ttg aat    1008
Asn His Ala Asn Val Val Lys Ala Cys Asp Val Pro Glu Glu Leu Asn
                325                 330                 335
att ttg att cat gat gtg cct ctt cta gca atg gaa tac tgt tct gga    1056
Ile Leu Ile His Asp Val Pro Leu Leu Ala Met Glu Tyr Cys Ser Gly
                340                 345                 350
gga gat ctc cga aag ctg ctc aac aaa cca gaa aat tgt tgt gga ctt    1104
Gly Asp Leu Arg Lys Leu Leu Asn Lys Pro Glu Asn Cys Cys Gly Leu
                355                 360                 365
aaa gaa agc cag ata ctt tct tta cta agt gat ata ggg tct ggg att    1152
Lys Glu Ser Gln Ile Leu Ser Leu Leu Ser Asp Ile Gly Ser Gly Ile
        370                 375                 380
cga tat ttg cat gaa aac aaa att ata cat cga gat cta aaa cct gaa    1200
Arg Tyr Leu His Glu Asn Lys Ile Ile His Arg Asp Leu Lys Pro Glu
385                 390                 395                 400
aac ata gtt ctt cag gat gtt ggt gga aag ata ata cat aaa ata att    1248
Asn Ile Val Leu Gln Asp Val Gly Gly Lys Ile Ile His Lys Ile Ile
                405                 410                 415
gat ctg gga tat gcc aaa gat gtt gat caa gga agt ctg tgt aca tct    1296
Asp Leu Gly Tyr Ala Lys Asp Val Asp Gln Gly Ser Leu Cys Thr Ser
                420                 425                 430
ttt gtg gga aca ctg cag tat ctg gcc cca gag ctc ttt gag aat aag    1344
Phe Val Gly Thr Leu Gln Tyr Leu Ala Pro Glu Leu Phe Glu Asn Lys
                435                 440                 445
cct tac aca gcc act gtt gat tat tgg agc ttt ggg acc atg gta ttt    1392
Pro Tyr Thr Ala Thr Val Asp Tyr Trp Ser Phe Gly Thr Met Val Phe
        450                 455                 460
gaa tgt att gct gga tat agg cct ttt ttg cat cat ctg cag cca ttt    1440
Glu Cys Ile Ala Gly Tyr Arg Pro Phe Leu His His Leu Gln Pro Phe
465                 470                 475                 480
acc tgg cat gag aag att aag aag aag gat cca aag tgt ata ttt gca    1488
Thr Trp His Glu Lys Ile Lys Lys Lys Asp Pro Lys Cys Ile Phe Ala
                485                 490                 495
tgt gaa gag atg tca gga gaa gtt cgg ttt agt agc cat tta cct caa    1536
Cys Glu Glu Met Ser Gly Glu Val Arg Phe Ser Ser His Leu Pro Gln
                500                 505                 510
cca aat agc ctt tgt agt tta ata gta gaa ccc atg gaa aac tgg cta    1584
Pro Asn Ser Leu Cys Ser Leu Ile Val Glu Pro Met Glu Asn Trp Leu
                515                 520                 525
cag ttg atg ttg aat tgg gac cct cag cag aga gga gga cct gtt gac    1632
Gln Leu Met Leu Asn Trp Asp Pro Gln Gln Arg Gly Gly Pro Val Asp
        530                 535                 540
ctt act ttg aag cag cca aga tgt ttt gta tta atg gat cac att ttg    1680
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142

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Leu Thr Leu Lys Gln Pro Arg Cys Phe Val Leu Met Asp His Ile Leu
545             550             555             560
aat ttg aag ata gta cac atc cta aat atg act tct gca aag ata att    1728
Asn Leu Lys Ile Val His Ile Leu Asn Met Thr Ser Ala Lys Ile Ile
                565             570             575
tct ttt ctg tta cca cct gat gaa agt ctt cat tca cta cag tct cgt    1776
Ser Phe Leu Leu Pro Pro Asp Glu Ser Leu His Ser Leu Gln Ser Arg
            580             585             590
att gag cgt gaa act gga ata aat act ggt tct caa gaa ctt ctt tca    1824
Ile Glu Arg Glu Thr Gly Ile Asn Thr Gly Ser Gln Glu Leu Leu Ser
        595             600             605
gag aca gga att tct ctg gat cct cgg aaa cca gcc tct caa tgt gtt    1872
Glu Thr Gly Ile Ser Leu Asp Pro Arg Lys Pro Ala Ser Gln Cys Val
    610             615             620
cta gat gga gtt aga ggc tgt gat agc tat atg gtt tat ttg ttt gat    1920
Leu Asp Gly Val Arg Gly Cys Asp Ser Tyr Met Val Tyr Leu Phe Asp
625             630             635             640
aaa agt aaa act gta tat gaa ggg cca ttt gct tcc aga agt tta tct    1968
Lys Ser Lys Thr Val Tyr Glu Gly Pro Phe Ala Ser Arg Ser Leu Ser
                645             650             655
gat tgt gta aat tat att gta cag gac agc aaa ata cag ctt cca att    2016
Asp Cys Val Asn Tyr Ile Val Gln Asp Ser Lys Ile Gln Leu Pro Ile
            660             665             670
ata cag ctg cgt aaa gtg tgg gct gaa gca gtg cac tat gtg tct gga    2064
Ile Gln Leu Arg Lys Val Trp Ala Glu Ala Val His Tyr Val Ser Gly
            675             680             685
cta aaa gaa gac tat agc agg ctc ttt cag gga caa agg gca gca atg    2112
Leu Lys Glu Asp Tyr Ser Arg Leu Phe Gln Gly Gln Arg Ala Ala Met
            690             695             700
tta agt ctt ctt aga tat aat gct aac tta aca aaa atg aag aac act    2160
Leu Ser Leu Leu Arg Tyr Asn Ala Asn Leu Thr Lys Met Lys Asn Thr
705             710             715             720
ttg atc tca gca tca caa caa ctg aaa gct aaa ttg gag ttt ttt cac    2208
Leu Ile Ser Ala Ser Gln Gln Leu Lys Ala Lys Leu Glu Phe Phe His
                725             730             735
aaa agc att cag ctt gac ttg gag aga tac agc gag cag atg acg tat    2256
Lys Ser Ile Gln Leu Asp Leu Glu Arg Tyr Ser Glu Gln Met Thr Tyr
                740             745             750
ggg ata tct tca gaa aaa atg cta aaa gca tgg aaa gaa atg gaa gaa    2304
Gly Ile Ser Ser Glu Lys Met Leu Lys Ala Trp Lys Glu Met Glu Glu
            755             760             765
aag gcc atc cac tat gct gag gtt ggt gtc att gga tac ctg gag gat    2352
Lys Ala Ile His Tyr Ala Glu Val Gly Val Ile Gly Tyr Leu Glu Asp
    770             775             780
cag att atg tct ttg cat gct gaa atc atg ggg cta cag aag agc ccc    2400
Gln Ile Met Ser Leu His Ala Glu Ile Met Gly Leu Gln Lys Ser Pro
785             790             795             800
tat gga aga cgt cag gga gac ttg atg gaa tct ctg gaa cag cgt gcc    2448
Tyr Gly Arg Arg Gln Gly Asp Leu Met Glu Ser Leu Glu Gln Arg Ala
            805             810             815
att gat cta tat aag cag tta aaa cac aga cct tca gat cac tcc tac    2496
Ile Asp Leu Tyr Lys Gln Leu Lys His Arg Pro Ser Asp His Ser Tyr
            820             825             830
agt gac agc aca gag atg gtg aaa atc att gtg cac act gtg cag agt    2544
Ser Asp Ser Thr Glu Met Val Lys Ile Ile Val His Thr Val Gln Ser
            835             840             845
cag gac cgt gtg ctc aag gag ctg ttt ggt cat ttg agc aag ttg ttg    2592
Gln Asp Arg Val Leu Lys Glu Leu Phe Gly His Leu Ser Lys Leu Leu
850             855             860
ggc tgt aag cag aag att att gat cta ctc cct aag gtg gaa gtg gcc    2640
Gly Cys Lys Gln Lys Ile Ile Asp Leu Leu Pro Lys Val Glu Val Ala
865             870             875             880
ctc agt aat atc aaa gaa gct gac aat act gtc atg ttc atg cag gga    2688
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143

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Leu Ser Asn Ile Lys Glu Ala Asp Asn Thr Val Met Phe Met Gln Gly
                    885                     890                 895
aaa agg cag aaa gaa ata tgg cat ctc ctt aaa att gcc tgt aca cag    2736
Lys Arg Gln Lys Glu Ile Trp His Leu Leu Lys Ile Ala Cys Thr Gln
                900                     905                 910
agt tct gcc cgc tct ctt gta gga tcc agt cta gaa ggt gca gta acc    2784
Ser Ser Ala Arg Ser Leu Val Gly Ser Ser Leu Glu Gly Ala Val Thr
                915                     920                 925
cct cag aca tca gca tgg ctg ccc ccg act tca gca gaa cat gat cat    2832
Pro Gln Thr Ser Ala Trp Leu Pro Pro Thr Ser Ala Glu His Asp His
            930                     935                 940
tct ctg tca tgt gtg gta act cct caa gat ggg gag act tca gca caa    2880
Ser Leu Ser Cys Val Val Thr Pro Gln Asp Gly Glu Thr Ser Ala Gln
945                 .       950                 955                 960
atg ata gaa gaa aat ttg aac tgc ctt ggc cat tta agc act att att    2928
Met Ile Glu Glu Asn Leu Asn Cys Leu Gly His Leu Ser Thr Ile Ile
                    965                     970                 975
cat gag gca aat gag gaa cag ggc aat agt atg atg aat ctt gat tgg    2976
His Glu Ala Asn Glu Glu Gln Gly Asn Ser Met Met Asn Leu Asp Trp
                980                     985                 990
agt tgg tta aca gaa tga                                             2994
Ser Trp Leu Thr Glu
            995
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<210> 121

<211> 997

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-lkappaB-kinase fusion

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<400> 121
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1                 5                 10                  15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20                  25                  30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35                  40                  45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50                  55                  60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100                 105                 110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
            115                 120                 125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                 135                 140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
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144

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                180                    185                    190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
            195                 200                 205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
        210                 215                 220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Thr Met Glu Arg Pro
                245                 250                 255
Pro Gly Leu Arg Pro Gly Ala Gly Gly Pro Trp Glu Met Arg Glu Arg
                260                 265                 270
Leu Gly Thr Gly Gly Phe Gly Asn Val Cys Leu Tyr Gln His Arg Glu
                275                 280                 285
Leu Asp Leu Lys Ile Ala Ile Lys Ser Cys Arg Leu Glu Leu Ser Thr
                290                 295                 300
Lys Asn Arg Glu Arg Trp Cys His Glu Ile Gln Ile Met Lys Lys Leu
305                 310                 315                 320
Asn His Ala Asn Val Val Lys Ala Cys Asp Val Pro Glu Glu Leu Asn
                325                 330                 335
Ile Leu Ile His Asp Val Pro Leu Leu Ala Met Glu Tyr Cys Ser Gly
                340                 345                 350
Gly Asp Leu Arg Lys Leu Leu Asn Lys Pro Glu Asn Cys Cys Gly Leu
            355                 360                 365
Lys Glu Ser Gln Ile Leu Ser Leu Leu Ser Asp Ile Gly Ser Gly Ile
    370                 375                 380
Arg Tyr Leu His Glu Asn Lys Ile Ile His Arg Asp Leu Lys Pro Glu
385                 390                 395                 400
Asn Ile Val Leu Gln Asp Val Gly Gly Lys Ile Ile His Lys Ile Ile
                405                 410                 415
Asp Leu Gly Tyr Ala Lys Asp Val Asp Gln Gly Ser Leu Cys Thr Ser
                420                 425                 430
Phe Val Gly Thr Leu Gln Tyr Leu Ala Pro Glu Leu Phe Glu Asn Lys
            435                 440                 445
Pro Tyr Thr Ala Thr Val Asp Tyr Trp Ser Phe Gly Thr Met Val Phe
    450                 455                 460
Glu Cys Ile Ala Gly Tyr Arg Pro Phe Leu His His Leu Gln Pro Phe
465                 470                 475                 480
Thr Trp His Glu Lys Ile Lys Lys Lys Asp Pro Lys Cys Ile Phe Ala
            485                 490                 495
Cys Glu Glu Met Ser Gly Glu Val Arg Phe Ser Ser His Leu Pro Gln
        500                 505                 510
Pro Asn Ser Leu Cys Ser Leu Ile Val Glu Pro Met Glu Asn Trp Leu
    515                 520                 525
Gln Leu Met Leu Asn Trp Asp Pro Gln Gln Arg Gly Gly Pro Val Asp
    530                 535                 540
Leu Thr Leu Lys Gln Pro Arg Cys Phe Val Leu Met Asp His Ile Leu
545                 550                 555                 560
Asn Leu Lys Ile Val His Ile Leu Asn Met Thr Ser Ala Lys Ile Ile
                565                 570                 575
Ser Phe Leu Leu Pro Pro Asp Glu Ser Leu His Ser Leu Gln Ser Arg
            580                 585                 590
Ile Glu Arg Glu Thr Gly Ile Asn Thr Gly Ser Gln Glu Leu Leu Ser
            595                 600                 605
Glu Thr Gly Ile Ser Leu Asp Pro Arg Lys Pro Ala Ser Gln Cys Val
    610                 615                 620
Leu Asp Gly Val Arg Gly Cys Asp Ser Tyr Met Val Tyr Leu Phe Asp
625                 630                 635                 640
Lys Ser Lys Thr Val Tyr Glu Gly Pro Phe Ala Ser Arg Ser Leu Ser
            645                 650                 655
Asp Cys Val Asn Tyr Ile Val Gln Asp Ser Lys Ile Gln Leu Pro Ile
            660                 665                 670
Ile Gln Leu Arg Lys Val Trp Ala Glu Ala Val His Tyr Val Ser Gly
    675                 680                 685

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Leu Lys Glu Asp Tyr Ser Arg Leu Phe Gln Gly Gln Arg Ala Ala Met
    690                 695             700
Leu Ser Leu Leu Arg Tyr Asn Ala Asn Leu Thr Lys Met Lys Asn Thr
705                 710             715                 720
Leu Ile Ser Ala Ser Gln Gln Leu Lys Ala Lys Leu Glu Phe Phe His
                725             730                 735
Lys Ser Ile Gln Leu Asp Leu Glu Arg Tyr Ser Glu Gln Met Thr Tyr
            740                 745             750
Gly Ile Ser Ser Glu Lys Met Leu Lys Ala Trp Lys Glu Met Glu Glu
            755             760             765
Lys Ala Ile His Tyr Ala Glu Val Gly Val Ile Gly Tyr Leu Glu Asp
    770                 775             780
Gln Ile Met Ser Leu His Ala Glu Ile Met Gly Leu Gln Lys Ser Pro
785                 790                 795                 800
Tyr Gly Arg Arg Gln Gly Asp Leu Met Glu Ser Leu Glu Gln Arg Ala
            805                 810             815
Ile Asp Leu Tyr Lys Gln Leu Lys His Arg Pro Ser Asp His Ser Tyr
            820                 825                 830
Ser Asp Ser Thr Glu Met Val Lys Ile Ile Val His Thr Val Gln Ser
        835                 840             845
Gln Asp Arg Val Leu Lys Glu Leu Phe Gly His Leu Ser Lys Leu Leu
    850                 855                 860
Gly Cys Lys Gln Lys Ile Ile Asp Leu Leu Pro Lys Val Glu Val Ala
865                 870                 875                 880
Leu Ser Asn Ile Lys Glu Ala Asp Asn Thr Val Met Phe Met Gln Gly
                885                 890                 895
Lys Arg Gln Lys Glu Ile Trp His Leu Leu Lys Ile Ala Cys Thr Gln
            900                 905                 910
Ser Ser Ala Arg Ser Leu Val Gly Ser Ser Leu Glu Gly Ala Val Thr
    915                 920                 925
Pro Gln Thr Ser Ala Trp Leu Pro Pro Thr Ser Ala Glu His Asp His
    930                 935                 940
Ser Leu Ser Cys Val Val Thr Pro Gln Asp Gly Glu Thr Ser Ala Gln
945                 950                 955                 960
Met Ile Glu Glu Asn Leu Asn Cys Leu Gly His Leu Ser Thr Ile Ile
                965                 970                 975
His Glu Ala Asn Glu Glu Gln Gly Asn Ser Met Met Asn Leu Asp Trp
            980                 985                 990
Ser Trp Leu Thr Glu
            995
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<210> 122

<211> 2991

<212> DNA

<213> Artificial Sequence

<220>

<223> IkappaB-kinase-EGFP fusion

<220>

<221> CDS

<222> (1)..(2988)

146

<400> 122

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atg gag cgg ccc ccg ggg ctg cgg ccg ggc gcg ggc ggg ccc tgg gag      48
Met Glu Arg Pro Pro Gly Leu Arg Pro Gly Ala Gly Gly Pro Trp Glu
1               5                   10                  15

atg cgg gag cgg ctg ggc acc ggc ggc ttc ggg aac gtc tgt ctg tac      96
Met Arg Glu Arg Leu Gly Thr Gly Gly Phe Gly Asn Val Cys Leu Tyr
            20                  25                  30

cag cat cgg gaa ctt gat ctc aaa ata gca att aag tct tgt cgc cta     144
Gln His Arg Glu Leu Asp Leu Lys Ile Ala Ile Lys Ser Cys Arg Leu
        35                  40                  45

gag cta agt acc aaa aac aga gaa cga tgg tgc cat gaa atc cag att     192
Glu Leu Ser Thr Lys Asn Arg Glu Arg Trp Cys His Glu Ile Gln Ile
    50                  55                  60

atg aag aag ttg aac cat gcc aat gtt gta aag gcc tgt gat gtt cct     240
Met Lys Lys Leu Asn His Ala Asn Val Val Lys Ala Cys Asp Val Pro
65                  70                  75                  80

gaa gaa ttg aat att ttg att cat gat gtg cct ctt cta gca atg gaa     288
Glu Glu Leu Asn Ile Leu Ile His Asp Val Pro Leu Leu Ala Met Glu
                85                  90                  95

tac tgt tct gga gga gat ctc cga aag ctg ctc aac aaa cca gaa aat     336
Tyr Cys Ser Gly Gly Asp Leu Arg Lys Leu Leu Asn Lys Pro Glu Asn
            100                 105                 110

tgt tgt gga ctt aaa gaa agc cag ata ctt tct tta cta agt gat ata     384
Cys Cys Gly Leu Lys Glu Ser Gln Ile Leu Ser Leu Leu Ser Asp Ile
        115                 120                 125

ggg tct ggg att cga tat ttg cat gaa aac aaa att ata cat cga gat     432
Gly Ser Gly Ile Arg Tyr Leu His Glu Asn Lys Ile Ile His Arg Asp
    130                 135                 140

cta aaa cct gaa aac ata gtt ctt cag gat gtt ggt gga aag ata ata     480
Leu Lys Pro Glu Asn Ile Val Leu Gln Asp Val Gly Gly Lys Ile Ile
145                 150                 155                 160

cat aaa ata att gat ctg gga tat gcc aaa gat gtt gat caa gga agt     528
His Lys Ile Ile Asp Leu Gly Tyr Ala Lys Asp Val Asp Gln Gly Ser
                165                 170                 175

ctg tgt aca tct ttt gtg gga aca ctg cag tat ctg gcc cca gag ctc     576
Leu Cys Thr Ser Phe Val Gly Thr Leu Gln Tyr Leu Ala Pro Glu Leu
            180                 185                 190

ttt gag aat aag cct tac aca gcc act gtt gat tat tgg agc ttt ggg     624
Phe Glu Asn Lys Pro Tyr Thr Ala Thr Val Asp Tyr Trp Ser Phe Gly
        195                 200                 205

acc atg gta ttt gaa tgt att gct gga tat agg cct ttt ttg cat cat     672
Thr Met Val Phe Glu Cys Ile Ala Gly Tyr Arg Pro Phe Leu His His
    210                 215                 220

ctg cag cca ttt acc tgg cat gag aag att aag aag aag gat cca aag     720
Leu Gln Pro Phe Thr Trp His Glu Lys Ile Lys Lys Lys Asp Pro Lys
225                 230                 235                 240

tgt ata ttt gca tgt gaa gag atg tca gga gaa gtt cgg ttt agt agc     768
Cys Ile Phe Ala Cys Glu Glu Met Ser Gly Glu Val Arg Phe Ser Ser
                245                 250                 255

cat tta cct caa cca aat agc ctt tgt agt tta ata gta gaa ccc atg     816
His Leu Pro Gln Pro Asn Ser Leu Cys Ser Leu Ile Val Glu Pro Met
            260                 265                 270

gaa aac tgg cta cag ttg atg ttg aat tgg gac cct cag cag aga gga     864
Glu Asn Trp Leu Gln Leu Met Leu Asn Trp Asp Pro Gln Gln Arg Gly
        275                 280                 285

gga cct gtt gac ctt act ttg aag cag cca aga tgt ttt gta tta atg     912
Gly Pro Val Asp Leu Thr Leu Lys Gln Pro Arg Cys Phe Val Leu Met
    290                 295                 300

gat cac att ttg aat ttg aag ata gta cac atc cta aat atg act tct     960
Asp His Ile Leu Asn Leu Lys Ile Val His Ile Leu Asn Met Thr Ser
305                 310                 315                 320
```

147

```
gca aag ata att tct ttt ctg tta cca cct gat gaa agt ctt cat tca          1008
Ala Lys Ile Ile Ser Phe Leu Leu Pro Pro Asp Glu Ser Leu His Ser
            325                     330                 335

cta cag tct cgt att gag cgt gaa act gga ata aat act ggt tct caa          1056
Leu Gln Ser Arg Ile Glu Arg Glu Thr Gly Ile Asn Thr Gly Ser Gln
            340                     345                 350

gaa ctt ctt tca gag aca gga att tct ctg gat cct cgg aaa cca gcc          1104
Glu Leu Leu Ser Glu Thr Gly Ile Ser Leu Asp Pro Arg Lys Pro Ala
            355                     360                 365

tct caa tgt gtt cta gat gga gtt aga ggc tgt gat agc tat atg gtt          1152
Ser Gln Cys Val Leu Asp Gly Val Arg Gly Cys Asp Ser Tyr Met Val
        370                     375                 380

tat ttg ttt gat aaa agt aaa act gta tat gaa ggg cca ttt gct tcc          1200
Tyr Leu Phe Asp Lys Ser Lys Thr Val Tyr Glu Gly Pro Phe Ala Ser
385                 390                     395                 400

aga agt tta tct gat tgt gta aat tat att gta cag gac agc aaa ata          1248
Arg Ser Leu Ser Asp Cys Val Asn Tyr Ile Val Gln Asp Ser Lys Ile
                405                     410                 415

cag ctt cca att ata cag ctg cgt aaa gtg tgg gct gaa gca gtg cac          1296
Gln Leu Pro Ile Ile Gln Leu Arg Lys Val Trp Ala Glu Ala Val His
            420                     425                 430

tat gtg tct gga cta aaa gaa gac tat agc agg ctc ttt cag gga caa          1344
Tyr Val Ser Gly Leu Lys Glu Asp Tyr Ser Arg Leu Phe Gln Gly Gln
            435                     440                 445

agg gca gca atg tta agt ctt ctt aga tat aat gct aac tta aca aaa          1392
Arg Ala Ala Met Leu Ser Leu Leu Arg Tyr Asn Ala Asn Leu Thr Lys
        450                     455                 460

atg aag aac act ttg atc tca gca tca caa caa ctg aaa gct aaa ttg          1440
Met Lys Asn Thr Leu Ile Ser Ala Ser Gln Gln Leu Lys Ala Lys Leu
465                 470                     475                 480

gag ttt ttt cac aaa agc att cag ctt gac ttg gag aga tac agc gag          1488
Glu Phe Phe His Lys Ser Ile Gln Leu Asp Leu Glu Arg Tyr Ser Glu
                485                     490                 495

cag atg acg tat ggg ata tct tca gaa aaa atg cta aaa gca tgg aaa          1536
Gln Met Thr Tyr Gly Ile Ser Ser Glu Lys Met Leu Lys Ala Trp Lys
            500                     505                 510

gaa atg gaa gaa aag gcc atc cac tat gct gag gtt ggt gtc att gga          1584
Glu Met Glu Glu Lys Ala Ile His Tyr Ala Glu Val Gly Val Ile Gly
            515                     520                 525

tac ctg gag gat cag att atg tct ttg cat gct gaa atc atg ggg cta          1632
Tyr Leu Glu Asp Gln Ile Met Ser Leu His Ala Glu Ile Met Gly Leu
            530                     535                 540

cag aag agc ccc tat gga aga cgt cag gga gac ttg atg gaa tct ctg          1680
Gln Lys Ser Pro Tyr Gly Arg Arg Gln Gly Asp Leu Met Glu Ser Leu
545                 550                     555                 560

gaa cag cgt gcc att gat cta tat aag cag tta aaa cac aga cct tca          1728
Glu Gln Arg Ala Ile Asp Leu Tyr Lys Gln Leu Lys His Arg Pro Ser
                565                     570                 575

gat cac tcc tac agt gac agc aca gag atg gtg aaa atc att gtg cac          1776
Asp His Ser Tyr Ser Asp Ser Thr Glu Met Val Lys Ile Ile Val His
            580                     585                 590

act gtg cag agt cag gac cgt gtg ctc aag gag ctg ttt ggt cat ttg          1824
Thr Val Gln Ser Gln Asp Arg Val Leu Lys Glu Leu Phe Gly His Leu
            595                     600                 605

agc aag ttg ttg ggc tgt aag cag aag att att gat cta ctc cct aag          1872
Ser Lys Leu Leu Gly Cys Lys Gln Lys Ile Ile Asp Leu Leu Pro Lys
            610                     615                 620

gtg gaa gtg gcc ctc agt aat atc aaa gaa gct gac aat act gtc atg          1920
Val Glu Val Ala Leu Ser Asn Ile Lys Glu Ala Asp Asn Thr Val Met
625                 630                     635                 640

ttc atg cag gga aaa agg cag aaa gaa ata tgg cat ctc ctt aaa att          1968
Phe Met Gln Gly Lys Arg Gln Lys Glu Ile Trp His Leu Leu Lys Ile
                645                     650                 655
```

148

```
gcc tgt aca cag agt tct gcc cgc tct ctt gta gga tcc agt cta gaa    2016
Ala Cys Thr Gln Ser Ser Ala Arg Ser Leu Val Gly Ser Ser Leu Glu
            660                 665                 670
ggt gca gta acc cct cag aca tca gca tgg ctg ccc ccg act tca gca    2064
Gly Ala Val Thr Pro Gln Thr Ser Ala Trp Leu Pro Pro Thr Ser Ala
            675                 680                 685
gaa cat gat cat tct ctg tca tgt gtg gta act cct caa gat ggg gag    2112
Glu His Asp His Ser Leu Ser Cys Val Val Thr Pro Gln Asp Gly Glu
            690                 695                 700
act tca gca caa atg ata gaa gaa aat ttg aac tgc ctt ggc cat tta    2160
Thr Ser Ala Gln Met Ile Glu Glu Asn Leu Asn Cys Leu Gly His Leu
705                 710                 715                 720
agc act att att cat gag gca aat gag gaa cag ggc aat agt atg atg    2208
Ser Thr Ile Ile His Glu Ala Asn Glu Glu Gln Gly Asn Ser Met Met
            725                 730                 735
aat ctt gat tgg agt tgg tta aca gaa tgg gta ccg cgg gcc cgg gat    2256
Asn Leu Asp Trp Ser Trp Leu Thr Glu Trp Val Pro Arg Ala Arg Asp
            740                 745                 750
cca ccg gtc gcc acc atg gtg agc aag ggc gag gag ctg ttc acc ggg    2304
Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly
            755                 760                 765
gtg gtg ccc atc ctg gtc gag ctg gac ggc gac gta aac ggc cac aag    2352
Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys
            770                 775                 780
ttc agc gtg tcc ggc gag ggc gag ggc gat gcc acc tac ggc aag ctg    2400
Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu
785                 790                 795                 800
acc ctg aag ttc atc tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc    2448
Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro
            805                 810                 815
acc ctc gtg acc acc ctg acc tac ggc gtg cag tgc ttc agc cgc tac    2496
Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr
            820                 825                 830
ccc gac cac atg aag cag cac gac ttc ttc aag tcc gcc atg ccc gaa    2544
Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu
            835                 840                 845
ggc tac gtc cag gag cgc acc atc ttc ttc aag gac gac ggc aac tac    2592
Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr
            850                 855                 860
aag acc cgc gcc gag gtg aag ttc gag ggc gac acc ctg gtg aac cgc    2640
Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg
865                 870                 875                 880
atc gag ctg aag ggc atc gac ttc aag gag gac ggc aac atc ctg ggg    2688
Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly
            885                 890                 895
cac aag ctg gag tac aac tac aac agc cac aac gtc tat atc atg gcc    2736
His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala
            900                 905                 910
gac aag cag aag aac ggc atc aag gtg aac ttc aag atc cgc cac aac    2784
Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn
            915                 920                 925
atc gag gac ggc agc gtg cag ctc gcc gac cac tac cag cag aac acc    2832
Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr
930                 935                 940
ccc atc ggc gac ggc ccc gtg ctg ctg ccc gac aac cac tac ctg agc    2880
Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser
945                 950                 955                 960
acc cag tcc gcc ctg agc aaa gac ccc aac gag aag cgc gat cac atg    2928
Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met
            965                 970                 975
gtc ctg ctg gag ttc gtg acc gcc gcc ggg atc act ctc ggc atg gac    2976
Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp
            980                 985                 990
```

149

```
gag ctg tac aag taa                                                    2991
Glu Leu Tyr Lys
        995


<210>   123

<211>   996

<212>   PRT

<213>   Artificial Sequence


<220>

<223>   IkappaB-kinase-EGFP fusion


<400>   123
Met Glu Arg Pro Pro Gly Leu Arg Pro Gly Ala Gly Gly Pro Trp Glu
1               5                   10                  15
Met Arg Glu Arg Leu Gly Thr Gly Gly Phe Gly Asn Val Cys Leu Tyr
            20                  25                  30
Gln His Arg Glu Leu Asp Leu Lys Ile Ala Ile Lys Ser Cys Arg Leu
        35                  40                  45
Glu Leu Ser Thr Lys Asn Arg Glu Arg Trp Cys His Glu Ile Gln Ile
        50                  55                  60
Met Lys Lys Leu Asn His Ala Asn Val Val Lys Ala Cys Asp Val Pro
65                  70                  75                  80
Glu Glu Leu Asn Ile Leu Ile His Asp Val Pro Leu Leu Ala Met Glu
                85                  90                  95
Tyr Cys Ser Gly Gly Asp Leu Arg Lys Leu Leu Asn Lys Pro Glu Asn
            100                 105                 110
Cys Cys Gly Leu Lys Glu Ser Gln Ile Leu Ser Leu Leu Ser Asp Ile
            115                 120                 125
Gly Ser Gly Ile Arg Tyr Leu His Glu Asn Lys Ile Ile His Arg Asp
        130                 135                 140
Leu Lys Pro Glu Asn Ile Val Leu Gln Asp Val Gly Gly Lys Ile Ile
145                 150                 155                 160
His Lys Ile Ile Asp Leu Gly Tyr Ala Lys Asp Val Asp Gln Gly Ser
                165                 170                 175
Leu Cys Thr Ser Phe Val Gly Thr Leu Gln Tyr Leu Ala Pro Glu Leu
            180                 185                 190
Phe Glu Asn Lys Pro Tyr Thr Ala Thr Val Asp Tyr Trp Ser Phe Gly
            195                 200                 205
Thr Met Val Phe Glu Cys Ile Ala Gly Tyr Arg Pro Phe Leu His His
    210                 215                 220
Leu Gln Pro Phe Thr Trp His Glu Lys Ile Lys Lys Lys Asp Pro Lys
225                 230                 235                 240
Cys Ile Phe Ala Cys Glu Glu Met Ser Gly Glu Val Arg Phe Ser Ser
            245                 250                 255
His Leu Pro Gln Pro Asn Ser Leu Cys Ser Leu Ile Val Glu Pro Met
            260                 265                 270
Glu Asn Trp Leu Gln Leu Met Leu Asn Trp Asp Pro Gln Gln Arg Gly
        275                 280                 285
Gly Pro Val Asp Leu Thr Leu Lys Gln Pro Arg Cys Phe Val Leu Met
        290                 295                 300
Asp His Ile Leu Asn Leu Lys Ile Val His Ile Leu Asn Met Thr Ser
305                 310                 315                 320
Ala Lys Ile Ile Ser Phe Leu Leu Pro Pro Asp Glu Ser Leu His Ser
                325                 330                 335
Leu Gln Ser Arg Ile Glu Arg Glu Thr Gly Ile Asn Thr Gly Ser Gln
```

150

```
                 340                      345                      350
Glu Leu Leu Ser Glu Thr Gly Ile Ser Leu Asp Pro Arg Lys Pro Ala
            355             360                      365
Ser Gln Cys Val Leu Asp Gly Val Arg Gly Cys Asp Ser Tyr Met Val
        370             375                      380
Tyr Leu Phe Asp Lys Ser Lys Thr Val Tyr Glu Gly Pro Phe Ala Ser
385                 390                      395                 400
Arg Ser Leu Ser Asp Cys Val Asn Tyr Ile Val Gln Asp Ser Lys Ile
                405                      410                      415
Gln Leu Pro Ile Ile Gln Leu Arg Lys Val Trp Ala Glu Ala Val His
                420                      425                      430
Tyr Val Ser Gly Leu Lys Glu Asp Tyr Ser Arg Leu Phe Gln Gly Gln
            435             440                      445
Arg Ala Ala Met Leu Ser Leu Leu Arg Tyr Asn Ala Asn Leu Thr Lys
    450                      455                      460
Met Lys Asn Thr Leu Ile Ser Ala Ser Gln Gln Leu Lys Ala Lys Leu
465                 470                      475                 480
Glu Phe Phe His Lys Ser Ile Gln Leu Asp Leu Glu Arg Tyr Ser Glu
                485                      490                      495
Gln Met Thr Tyr Gly Ile Ser Ser Glu Lys Met Leu Lys Ala Trp Lys
            500                      505                      510
Glu Met Glu Glu Lys Ala Ile His Tyr Ala Glu Val Gly Val Ile Gly
            515                      520                      525
Tyr Leu Glu Asp Gln Ile Met Ser Leu His Ala Glu Ile Met Gly Leu
    530                      535                      540
Gln Lys Ser Pro Tyr Gly Arg Arg Gln Gly Asp Leu Met Glu Ser Leu
545                      550                      555                 560
Glu Gln Arg Ala Ile Asp Leu Tyr Lys Gln Leu Lys His Arg Pro Ser
                565                      570                      575
Asp His Ser Tyr Ser Asp Ser Thr Glu Met Val Lys Ile Ile Val His
            580                      585                      590
Thr Val Gln Ser Gln Asp Arg Val Leu Lys Glu Leu Phe Gly His Leu
            595                      600                      605
Ser Lys Leu Leu Gly Cys Lys Gln Lys Ile Ile Asp Leu Leu Pro Lys
    610                      615                      620
Val Glu Val Ala Leu Ser Asn Ile Lys Glu Ala Asp Asn Thr Val Met
625                      630                      635                 640
Phe Met Gln Gly Lys Arg Gln Lys Glu Ile Trp His Leu Leu Lys Ile
                645                      650                      655
Ala Cys Thr Gln Ser Ser Ala Arg Ser Leu Val Gly Ser Ser Leu Glu
                660                      665                      670
Gly Ala Val Thr Pro Gln Thr Ser Ala Trp Leu Pro Pro Thr Ser Ala
            675                      680                      685
Glu His Asp His Ser Leu Ser Cys Val Val Thr Pro Gln Asp Gly Glu
    690                      695                      700
Thr Ser Ala Gln Met Ile Glu Glu Asn Leu Asn Cys Leu Gly His Leu
705                      710                      715                 720
Ser Thr Ile Ile His Glu Ala Asn Glu Glu Gln Gly Asn Ser Met Met
                725                      730                      735
Asn Leu Asp Trp Ser Trp Leu Thr Glu Trp Val Pro Arg Ala Arg Asp
            740                      745                      750
Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly
            755                      760                      765
Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys
    770                      775                      780
Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu
785                 790                      795                 800
Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro
                805                      810                      815
Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr
        820                      825                      830
Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu
        835                      840                      845
```

151

```
Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr
    850                 855                 860
Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg
865                 870                 875                 880
Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly
                885                 890                 895
His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala
            900                 905                 910
Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn
        915                 920                 925
Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr
    930                 935                 940
Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser
945                 950                 955                 960
Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met
                965                 970                 975
Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp
            980                 985                 990
Glu Leu Tyr Lys
        995


<210>   124

<211>   1908

<212>   DNA

<213>   Artificial Sequence



<220>

<223>   EGFP-VASP fusion

<220>

<221>   CDS

<222>   (1)..(1905)



<400>   124
atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg      48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc      96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc     144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc     192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag     240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag     288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
```

152

```
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag     336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100                 105                 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc     384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
            115                 120                 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac     432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130                 135                 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac     480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc     528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc     576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg     624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
            195                 200                 205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc     672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                 215                 220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc     720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
gga ctc aga tct cga gct caa gct tcc atg agc gag acg gtc atc atg     768
Gly Leu Arg Ser Arg Ala Gln Ala Ser Met Ser Glu Thr Val Ile Met
                245                 250                 255
agc gag acg gtc atc tgt tcc agc cgg gcc act gtg atg ctt tat gat     816
Ser Glu Thr Val Ile Cys Ser Ser Arg Ala Thr Val Met Leu Tyr Asp
                260                 265                 270
gat ggc aac aag cga tgg ctc cct gct ggc acg ggt ccc cag gcc ttc     864
Asp Gly Asn Lys Arg Trp Leu Pro Ala Gly Thr Gly Pro Gln Ala Phe
    275                 280                 285
agc cgc gtc cag atc tac cac aac ccc acg gcc aat tcc ttt cgc gtc     912
Ser Arg Val Gln Ile Tyr His Asn Pro Thr Ala Asn Ser Phe Arg Val
    290                 295                 300
gtg ggc cgg aag atg cag ccc gac cag cag gtg gtc atc aac tgt gcc     960
Val Gly Arg Lys Met Gln Pro Asp Gln Gln Val Val Ile Asn Cys Ala
305                 310                 315                 320
atc gtc cgg ggt gtc aag tat aac cag gcc acc ccc aac ttc cat cag    1008
Ile Val Arg Gly Val Lys Tyr Asn Gln Ala Thr Pro Asn Phe His Gln
                325                 330                 335
tgg cgc gac gct cgc cag gtc tgg ggc ctc aac ttc ggc agc aag gag    1056
Trp Arg Asp Ala Arg Gln Val Trp Gly Leu Asn Phe Gly Ser Lys Glu
                340                 345                 350
gat gcg gcc cag ttt gcc gcc ggc atg gcc agt gcc cta gag gcg ttg    1104
Asp Ala Ala Gln Phe Ala Ala Gly Met Ala Ser Ala Leu Glu Ala Leu
            355                 360                 365
gaa gga ggt ggg ccc cct cca ccc cca gca ctt ccc acc tgg tcg gtc    1152
Glu Gly Gly Gly Pro Pro Pro Pro Ala Leu Pro Thr Trp Ser Val
            370                 375                 380
ccg aac ggc ccc tcc ccg gag gag gtg gag cag cag aaa agg cag cag    1200
Pro Asn Gly Pro Ser Pro Glu Glu Val Glu Gln Gln Lys Arg Gln Gln
385                 390                 395                 400
ccc ggc ccg tcg gag cac ata gag cgc cgg gtc tcc aat gca gga ggc    1248
Pro Gly Pro Ser Glu His Ile Glu Arg Arg Val Ser Asn Ala Gly Gly
                405                 410                 415
cca cct gct ccc ccc gct ggg ggt cca ccc cca cca cca gga cct ccc    1296
Pro Pro Ala Pro Pro Ala Gly Gly Pro Pro Pro Pro Gly Pro Pro
            420                 425                 430
```

153

```
cct cct cca ggt ccc ccc cca ccc cca ggt ttg ccc cct tcg ggg gtc    1344
Pro Pro Pro Gly Pro Pro Pro Pro Pro Gly Leu Pro Pro Ser Gly Val
        435             440             445
cca gct gca gcg cac gga gca ggg gga gga cca ccc cct gca ccc cct    1392
Pro Ala Ala Ala His Gly Ala Gly Gly Gly Pro Pro Pro Ala Pro Pro
450             455             460
ctc ccg gca gca cag ggc cct ggt ggt ggg gga gct ggg gcc cca ggc    1440
Leu Pro Ala Ala Gln Gly Pro Gly Gly Gly Gly Ala Gly Ala Pro Gly
465             470             475             480
ctg gcc gca gct att gct gga gcc aaa ctc agg aaa gtc agc aag cag    1488
Leu Ala Ala Ala Ile Ala Gly Ala Lys Leu Arg Lys Val Ser Lys Gln
            485             490             495
gag gag gcc tca ggg ggg ccc aca gcc ccc aaa gct gag agt ggt cga    1536
Glu Glu Ala Ser Gly Gly Pro Thr Ala Pro Lys Ala Glu Ser Gly Arg
            500             505             510
agc gga ggt ggg gga ctc atg gaa gag atg aac gcc atg ctg gcc cgg    1584
Ser Gly Gly Gly Gly Leu Met Glu Glu Met Asn Ala Met Leu Ala Arg
            515             520             525
aga agg aaa gcc acg caa gtt ggg gag aaa acc ccc aag gat gaa tct    1632
Arg Arg Lys Ala Thr Gln Val Gly Glu Lys Thr Pro Lys Asp Glu Ser
            530             535             540
gcc aat cag gag gag cca gag gcc aga gtc ccg gcc cag agt gaa tct    1680
Ala Asn Gln Glu Glu Pro Glu Ala Arg Val Pro Ala Gln Ser Glu Ser
545             550             555             560
gtg cgg aga ccc tgg gag aag aac agc aca acc ttg cca agg atg aag    1728
Val Arg Arg Pro Trp Glu Lys Asn Ser Thr Thr Leu Pro Arg Met Lys
            565             570             575
tcg tct tct tcg gtg acc act tcc gag acc caa ccc tgc acg ccc agc    1776
Ser Ser Ser Ser Val Thr Thr Ser Glu Thr Gln Pro Cys Thr Pro Ser
            580             585             590
tcc agt gat tac tcg gac cta cag agg gtg aaa cag gag ctt ctg gaa    1824
Ser Ser Asp Tyr Ser Asp Leu Gln Arg Val Lys Gln Glu Leu Leu Glu
            595             600             605
gag gtg aag aag gaa ttg cag aaa gtg aaa gag gaa atc att gaa gcc    1872
Glu Val Lys Lys Glu Leu Gln Lys Val Lys Glu Glu Ile Ile Glu Ala
            610             615             620
ttc gtc cag gag ctg agg aag cgg ggt tct ccc tga                    1908
Phe Val Gln Glu Leu Arg Lys Arg Gly Ser Pro
625             630             635
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<210> 125

<211> 635

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-VASP fusion

<400> 125
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Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5               10              15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20              25              30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35              40              45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
```

154

```
              50                      55                      60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                      70                      75                      80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                    85                      90                      95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100                     105                     110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
            115                     120                     125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                     135                     140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                     150                     155                     160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                     170                     175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                     185                     190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
            195                     200                     205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
        210                     215                     220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                     230                     235                     240
Gly Leu Arg Ser Arg Ala Gln Ala Ser Met Ser Glu Thr Val Ile Met
                245                     250                     255
Ser Glu Thr Val Ile Cys Ser Ser Arg Ala Thr Val Met Leu Tyr Asp
            260                     265                     270
Asp Gly Asn Lys Arg Trp Leu Pro Ala Gly Thr Gly Pro Gln Ala Phe
        275                     280                     285
Ser Arg Val Gln Ile Tyr His Asn Pro Thr Ala Asn Ser Phe Arg Val
    290                     295                     300
Val Gly Arg Lys Met Gln Pro Asp Gln Gln Val Val Ile Asn Cys Ala
305                     310                     315                     320
Ile Val Arg Gly Val Lys Tyr Asn Gln Ala Thr Pro Asn Phe His Gln
                325                     330                     335
Trp Arg Asp Ala Arg Gln Val Trp Gly Leu Asn Phe Gly Ser Lys Glu
            340                     345                     350
Asp Ala Ala Gln Phe Ala Ala Gly Met Ala Ser Ala Leu Glu Ala Leu
        355                     360                     365
Glu Gly Gly Gly Pro Pro Pro Pro Ala Leu Pro Thr Trp Ser Val
    370                     375                     380
Pro Asn Gly Pro Ser Pro Glu Glu Val Glu Gln Gln Lys Arg Gln Gln
385                     390                     395                     400
Pro Gly Pro Ser Glu His Ile Glu Arg Arg Val Ser Asn Ala Gly Gly
            405                     410                     415
Pro Pro Ala Pro Pro Ala Gly Gly Pro Pro Pro Pro Gly Pro Pro
        420                     425                     430
Pro Pro Pro Gly Pro Pro Pro Pro Gly Leu Pro Pro Ser Gly Val
        435                     440                     445
Pro Ala Ala Ala His Gly Ala Gly Gly Pro Pro Pro Ala Pro Pro
    450                     455                     460
Leu Pro Ala Ala Gln Gly Pro Gly Gly Gly Gly Ala Gly Ala Pro Gly
465                     470                     475                     480
Leu Ala Ala Ala Ile Ala Gly Ala Lys Leu Arg Lys Val Ser Lys Gln
                485                     490                     495
Glu Glu Ala Ser Gly Gly Pro Thr Ala Pro Lys Ala Glu Ser Gly Arg
            500                     505                     510
Ser Gly Gly Gly Gly Leu Met Glu Glu Met Asn Ala Met Leu Ala Arg
        515                     520                     525
Arg Arg Lys Ala Thr Gln Val Gly Glu Lys Thr Pro Lys Asp Glu Ser
    530                     535                     540
Ala Asn Gln Glu Glu Pro Glu Ala Arg Val Pro Ala Gln Ser Glu Ser
545                     550                     555                     560
```

155

```
Val Arg Arg Pro Trp Glu Lys Asn Ser Thr Thr Leu Pro Arg Met Lys
              565                 570                 575
Ser Ser Ser Ser Val Thr Thr Ser Glu Thr Gln Pro Cys Thr Pro Ser
          580                 585                 590
Ser Ser Asp Tyr Ser Asp Leu Gln Arg Val Lys Gln Glu Leu Leu Glu
          595                 600                 605
Glu Val Lys Lys Glu Leu Gln Lys Val Lys Glu Glu Ile Ile Glu Ala
      610                 615                 620
Phe Val Gln Glu Leu Arg Lys Arg Gly Ser Pro
625                 630                 635
```

<210> 126

<211> 1329

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-RhoA fusion

<220>

<221> CDS

<222> (1)..(1326)


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<400>  126
atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg        48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc        96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc       144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc       192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag       240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag       288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag       336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100                 105                 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc       384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115                 120                 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac       432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                 135                 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac       480
```

156

```
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150             155                 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc    528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc    576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
                180                 185                 190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg    624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
            195                 200                 205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc    672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
            210                 215                 220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc    720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
gga ctc aga tct cga gct caa gct tca atg gct gcc atc cgg aag aaa    768
Gly Leu Arg Ser Arg Ala Gln Ala Ser Met Ala Ala Ile Arg Lys Lys
                245                 250                 255
ctg gtg att gtt ggt gat gga gcc tgt gga aag aca tgc ttg ctc ata    816
Leu Val Ile Val Gly Asp Gly Ala Cys Gly Lys Thr Cys Leu Leu Ile
                260                 265                 270
gtc ttc agc aag gac cag ttc cca gag gtg tat gtg ccc aca gtg ttt    864
Val Phe Ser Lys Asp Gln Phe Pro Glu Val Tyr Val Pro Thr Val Phe
            275                 280                 285
gag aac tat gtg gca gat atc gag gtg gat gga aag cag gta gag ttg    912
Glu Asn Tyr Val Ala Asp Ile Glu Val Asp Gly Lys Gln Val Glu Leu
        290                 295                 300
gct ttg tgg gac aca gct ggg cag gaa gat tat gat cgc ctg agg ccc    960
Ala Leu Trp Asp Thr Ala Gly Gln Glu Asp Tyr Asp Arg Leu Arg Pro
305                 310                 315                 320
ctc tcc tac cca gat acc gat gtt ata ctg atg tgt ttt tcc atc gac   1008
Leu Ser Tyr Pro Asp Thr Asp Val Ile Leu Met Cys Phe Ser Ile Asp
                325                 330                 335
agc cct gat agt tta gaa aac atc cca gaa aag tgg acc cca gaa gtc   1056
Ser Pro Asp Ser Leu Glu Asn Ile Pro Glu Lys Trp Thr Pro Glu Val
                340                 345                 350
aag cat ttc tgt ccc aac gtg ccc atc atc ctg gtt ggg aat aag aag   1104
Lys His Phe Cys Pro Asn Val Pro Ile Ile Leu Val Gly Asn Lys Lys
            355                 360                 365
gat ctt cgg aat gat gag cac aca agg cgg gag cta gcc aag atg aag   1152
Asp Leu Arg Asn Asp Glu His Thr Arg Arg Glu Leu Ala Lys Met Lys
        370                 375                 380
cag gag ccg gtg aaa cct gaa gaa ggc aga gat atg gca aac agg att   1200
Gln Glu Pro Val Lys Pro Glu Glu Gly Arg Asp Met Ala Asn Arg Ile
385                 390                 395                 400
ggc gct ttt ggg tac atg gag tgt tca gca aag acc aaa gat gga gtg   1248
Gly Ala Phe Gly Tyr Met Glu Cys Ser Ala Lys Thr Lys Asp Gly Val
                405                 410                 415
aga gag gtt ttt gaa atg gct acg aga gct gct ctg caa gct aga cgt   1296
Arg Glu Val Phe Glu Met Ala Thr Arg Ala Ala Leu Gln Ala Arg Arg
                420                 425                 430
ggg aag aaa aaa tct ggt tgc ctt gtc ttg tga                       1329
Gly Lys Lys Lys Ser Gly Cys Leu Val Leu
            435                 440
```

<210> 127

<211> 442

157

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-RhoA fusion

<400> 127
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Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5               10              15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20              25              30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35              40              45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50              55              60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65              70              75              80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85              90              95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100             105             110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115             120             125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130             135             140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145             150             155             160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
            165             170             175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
        180             185             190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195             200             205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210             215             220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225             230             235             240
Gly Leu Arg Ser Arg Ala Gln Ala Ser Met Ala Ala Ile Arg Lys Lys
            245             250             255
Leu Val Ile Val Gly Asp Gly Ala Cys Gly Lys Thr Cys Leu Leu Ile
            260             265             270
Val Phe Ser Lys Asp Gln Phe Pro Glu Val Tyr Val Pro Thr Val Phe
        275             280             285
Glu Asn Tyr Val Ala Asp Ile Glu Val Asp Gly Lys Gln Val Glu Leu
    290             295             300
Ala Leu Trp Asp Thr Ala Gly Gln Glu Asp Tyr Asp Arg Leu Arg Pro
305             310             315             320
Leu Ser Tyr Pro Asp Thr Asp Val Ile Leu Met Cys Phe Ser Ile Asp
            325             330             335
Ser Pro Asp Ser Leu Glu Asn Ile Pro Glu Lys Trp Thr Pro Glu Val
            340             345             350
Lys His Phe Cys Pro Asn Val Pro Ile Ile Leu Val Gly Asn Lys Lys
        355             360             365
Asp Leu Arg Asn Asp Glu His Thr Arg Arg Glu Leu Ala Lys Met Lys
    370             375             380
Gln Glu Pro Val Lys Pro Glu Glu Gly Arg Asp Met Ala Asn Arg Ile
385             390             395             400
Gly Ala Phe Gly Tyr Met Glu Cys Ser Ala Lys Thr Lys Asp Gly Val
            405             410             415
```

158

```
Arg Glu Val Phe Glu Met Ala Thr Arg Ala Ala Leu Gln Ala Arg Arg
            420                 425                 430
Gly Lys Lys Lys Ser Gly Cys Leu Val Leu
            435                 440


<210>   128

<211>   1140

<212>   DNA

<213>   Artificial Sequence


<220>

<223>   actin-binding-domain-EGFP fusion

<220>

<221>   CDS

<222>   (1)..(1137)


<400>   128
atg gac cat tat gat tct cag caa acc aac gat tac atg cag cca gaa      48
Met Asp His Tyr Asp Ser Gln Gln Thr Asn Asp Tyr Met Gln Pro Glu
1               5                   10                  15
gag gac tgg gac cgg gac ctg ctc ctg gac ccg gcc tgg gag aag cag      96
Glu Asp Trp Asp Arg Asp Leu Leu Leu Asp Pro Ala Trp Glu Lys Gln
                20                  25                  30
cag aga aag aca ttc acg gca tgg tgt aac tcc cac ctc cgg aag gcg     144
Gln Arg Lys Thr Phe Thr Ala Trp Cys Asn Ser His Leu Arg Lys Ala
            35                  40                  45
ggg aca cag atc gag aac atc gaa gag gac ttc cgg gat ggc ctg aag     192
Gly Thr Gln Ile Glu Asn Ile Glu Glu Asp Phe Arg Asp Gly Leu Lys
        50                  55                  60
ctc atg ctg ctg ctg gag gtc atc tca ggt gaa cgc ttg gcc aag cca     240
Leu Met Leu Leu Leu Glu Val Ile Ser Gly Glu Arg Leu Ala Lys Pro
65                  70                  75                  80
gag cga ggc aag atg aga gtg cac aag atc tcc aac gtc aac aag gcc     288
Glu Arg Gly Lys Met Arg Val His Lys Ile Ser Asn Val Asn Lys Ala
                85                  90                  95
ctg gat ttc ata gcc agc aaa ggc gtc aaa ctg gtg tcc atc gga gcc     336
Leu Asp Phe Ile Ala Ser Lys Gly Val Lys Leu Val Ser Ile Gly Ala
                100                 105                 110
gaa gaa atc gtg gat ggg aat gtg aag atg acc ctg ggc atg atc tgg     384
Glu Glu Ile Val Asp Gly Asn Val Lys Met Thr Leu Gly Met Ile Trp
            115                 120                 125
acc atc atc ctg cgc agg gat cca ccg gtc gcc acc atg gtg agc aag     432
Thr Ile Ile Leu Arg Arg Asp Pro Pro Val Ala Thr Met Val Ser Lys
        130                 135                 140
ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc gag ctg gac     480
Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp
145                 150                 155                 160
ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag ggc gag ggc     528
Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly
                165                 170                 175
gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc acc acc ggc     576
```

159

```
Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly
            180                     185                 190
aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg acc tac ggc      624
Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly
            195                     200                 205
gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag cac gac ttc      672
Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His Asp Phe
            210                     215                 220
ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc acc atc ttc      720
Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe
225                     230                     235                 240
ttc aag gac gac ggc aac tac aag acc cgc gcc gag gtg aag ttc gag      768
Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu
                    245                     250                 255
ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc atc gac ttc aag      816
Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys
                260                     265                 270
gag gac ggc aac atc ctg ggg cac aag ctg gag tac aac tac aac agc      864
Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser
                275                     280                 285
cac aac gtc tat atc atg gcc gac aag cag aag aac ggc atc aag gtg      912
His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val
            290                     295                 300
aac ttc aag atc cgc cac aac atc gag gac ggc agc gtg cag ctc gcc      960
Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala
305                     310                     315                 320
gac cac tac cag cag aac acc ccc atc ggc gac ggc ccc gtg ctg ctg     1008
Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu
                    325                     330                 335
ccc gac aac cac tac ctg agc acc cag tcc gcc ctg agc aaa gac ccc     1056
Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro
                340                     345                 350
aac gag aag cgc gat cac atg gtc ctg ctg gag ttc gtg acc gcc gcc     1104
Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr Ala Ala
                355                     360                 365
ggg atc act ctc ggc atg gac gag ctg tac aag taa                     1140
Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
            370                     375
```

<210> 129

<211> 379

<212> PRT

<213> Artificial Sequence

<220>

<223> actin-binding-domain-EGFP fusion

<400> 129
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Met Asp His Tyr Asp Ser Gln Gln Thr Asn Asp Tyr Met Gln Pro Glu
1               5                   10                  15
Glu Asp Trp Asp Arg Asp Leu Leu Leu Asp Pro Ala Trp Glu Lys Gln
            20                  25                  30
Gln Arg Lys Thr Phe Thr Ala Trp Cys Asn Ser His Leu Arg Lys Ala
        35                  40                  45
Gly Thr Gln Ile Glu Asn Ile Glu Glu Asp Phe Arg Asp Gly Leu Lys
    50                  55                  60
```

```
Leu Met Leu Leu Leu Glu Val Ile Ser Gly Glu Arg Leu Ala Lys Pro
65              70                  75                      80
Glu Arg Gly Lys Met Arg Val His Lys Ile Ser Asn Val Asn Lys Ala
            85                  90                  95
Leu Asp Phe Ile Ala Ser Lys Gly Val Lys Leu Val Ser Ile Gly Ala
            100                 105                 110
Glu Glu Ile Val Asp Gly Asn Val Lys Met Thr Leu Gly Met Ile Trp
    115                 120                 125
Thr Ile Ile Leu Arg Arg Asp Pro Pro Val Ala Thr Met Val Ser Lys
    130                 135                 140
Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp
145                 150                 155                 160
Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly
                165                 170                 175
Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly
            180                 185                 190
Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly
            195                 200                 205
Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His Asp Phe
    210                 215                 220
Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe
225                 230                 235                 240
Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu
            245                 250                 255
Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys
            260                 265                 270
Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser
            275                 280                 285
His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val
    290                 295                 300
Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala
305                 310                 315                 320
Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu
            325                 330                 335
Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro
            340                 345                 350
Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr Ala Ala
            355                 360                 365
Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
370                 375
```

<210> 130

<211> 3516

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-NFAT fusion

<220>

<221> CDS

<222> (1)..(3513)

161

<400> 130

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atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg        48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc        96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc       144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc       192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag       240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag       288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag       336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100                 105                 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc       384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115                 120                 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac       432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130                 135                 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac       480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc       528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc       576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg       624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195                 200                 205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc       672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                 215                 220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc       720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
gga ctc aga tct cga gcc atg aac gcc ccc gag cgg cag ccc caa ccc       768
Gly Leu Arg Ser Arg Ala Met Asn Ala Pro Glu Arg Gln Pro Gln Pro
                245                 250                 255
gac ggc ggg gac gcc cca ggc cac gag cct ggg ggc agc ccc caa gac       816
Asp Gly Gly Asp Ala Pro Gly His Glu Pro Gly Gly Ser Pro Gln Asp
            260                 265                 270
gag ctt gac ttc tcc atc ctc ttc gac tat gag tat ttg aat ccg aac       864
Glu Leu Asp Phe Ser Ile Leu Phe Asp Tyr Glu Tyr Leu Asn Pro Asn
        275                 280                 285
gaa gaa gag ccg aat gca cat aag gtc gcc agc cca ccc tcc gga ccc       912
Glu Glu Glu Pro Asn Ala His Lys Val Ala Ser Pro Pro Ser Gly Pro
    290                 295                 300
gca tac ccc gat gat gta atg gac tat ggc ctc aag cca tac agc ccc       960
Ala Tyr Pro Asp Asp Val Met Asp Tyr Gly Leu Lys Pro Tyr Ser Pro
305                 310                 315                 320
```

162

```
ctt gct agt ctc tct ggc gag ccc ccc ggc cga ttc gga gag ccg gat     1008
Leu Ala Ser Leu Ser Gly Glu Pro Pro Gly Arg Phe Gly Glu Pro Asp
            325             330                 335
agg gta ggg ccg cag aag ttt ctg agc gcg gcc aag cca gca ggg gcc     1056
Arg Val Gly Pro Gln Lys Phe Leu Ser Ala Ala Lys Pro Ala Gly Ala
            340             345                 350
tcg ggc ctg agc cct cgg atc gag atc act ccg tcc cac gaa ctg atc     1104
Ser Gly Leu Ser Pro Arg Ile Glu Ile Thr Pro Ser His Glu Leu Ile
            355             360                 365
cag gca gtg ggg ccc ctc cgc atg aga gac gcg ggc ctc ctg gtg gag     1152
Gln Ala Val Gly Pro Leu Arg Met Arg Asp Ala Gly Leu Leu Val Glu
            370             375                 380
cag cct ccc ctg gcc ggg gtg gcc gcc agc ccg agg ttc acc ctg ccc     1200
Gln Pro Pro Leu Ala Gly Val Ala Ala Ser Pro Arg Phe Thr Leu Pro
385             390                 395                 400
gtg ccc ggc ttc gag ggc tac cgc gag ccg ctt tgc ttg agc ccc gct     1248
Val Pro Gly Phe Glu Gly Tyr Arg Glu Pro Leu Cys Leu Ser Pro Ala
            405             410                 415
agc agc ggc tcc tct gcc agc ttc att tct gac acc ttc tcc ccc tac     1296
Ser Ser Gly Ser Ser Ala Ser Phe Ile Ser Asp Thr Phe Ser Pro Tyr
            420             425                 430
acc tcg ccc tgc gtc tcg ccc aat aac ggc ggg ccc gac gac ctg tgt     1344
Thr Ser Pro Cys Val Ser Pro Asn Asn Gly Gly Pro Asp Asp Leu Cys
            435             440                 445
ccg cag ttt caa aac atc cct gct cat tat tcc ccc aga acc tcg cca     1392
Pro Gln Phe Gln Asn Ile Pro Ala His Tyr Ser Pro Arg Thr Ser Pro
            450             455                 460
ata atg tca cct cga acc agc ctc gcc gag gac agc tgc ctg ggc cgc     1440
Ile Met Ser Pro Arg Thr Ser Leu Ala Glu Asp Ser Cys Leu Gly Arg
465             470                 475                 480
cac tcg ccc gtg ccc cgt ccg gcc tcc cgc tcc tca tcg cct ggt gcc     1488
His Ser Pro Val Pro Arg Pro Ala Ser Arg Ser Ser Ser Pro Gly Ala
            485             490                 495
aag cgg agg cat tcg tgc gcc gag gcc ttg gtt gcc ctg ccg ccc gga     1536
Lys Arg Arg His Ser Cys Ala Glu Ala Leu Val Ala Leu Pro Pro Gly
            500             505                 510
gcc tca ccc cag cgc tcc cgg agc ccc tcg ccg cag ccc tca tct cac     1584
Ala Ser Pro Gln Arg Ser Arg Ser Pro Ser Pro Gln Pro Ser Ser His
            515             520                 525
gtg gca ccc cag gac cac ggc tcc ccg gct ggg tac ccc cct gtg gct     1632
Val Ala Pro Gln Asp His Gly Ser Pro Ala Gly Tyr Pro Pro Val Ala
            530             535                 540
ggc tct gcc gtg atc atg gat gcc ctg aac agc ctc gcc acg gac tcg     1680
Gly Ser Ala Val Ile Met Asp Ala Leu Asn Ser Leu Ala Thr Asp Ser
545             550                 555                 560
cct tgt ggg atc ccc ccc aag atg tgg aag acc agc cct gac ccc tcg     1728
Pro Cys Gly Ile Pro Pro Lys Met Trp Lys Thr Ser Pro Asp Pro Ser
            565             570                 575
ccg gtg tct gcc gcc cca tcc aag gcc ggc ctg cct cgc cac atc tac     1776
Pro Val Ser Ala Ala Pro Ser Lys Ala Gly Leu Pro Arg His Ile Tyr
            580             585                 590
ccg gcc gtg gag ttc ctg ggg ccc tgc gag cag ggc gag agg aga aac     1824
Pro Ala Val Glu Phe Leu Gly Pro Cys Glu Gln Gly Glu Arg Arg Asn
            595             600                 605
tcg gct cca gaa tcc atc ctg ctg gtt ccg ccc act tgg ccc aag ccg     1872
Ser Ala Pro Glu Ser Ile Leu Leu Val Pro Pro Thr Trp Pro Lys Pro
            610             615                 620
ctg gtg cct gcc att ccc atc tgc agc atc cca gtg act gca tcc ctc     1920
Leu Val Pro Ala Ile Pro Ile Cys Ser Ile Pro Val Thr Ala Ser Leu
625             630                 635                 640
cct cca ctt gag tgg ccg ctg tcc agt cag tca ggc tct tac gag ctg     1968
Pro Pro Leu Glu Trp Pro Leu Ser Ser Gln Ser Gly Ser Tyr Glu Leu
            645             650                 655
```

163

```
cgg atc gag gtg cag ccc aag cca cat cac cgg gcc cac tat gag aca        2016
Arg Ile Glu Val Gln Pro Lys Pro His His Arg Ala His Tyr Glu Thr
            660             665             670

gaa ggc agc cga ggg gct gtc aaa gct cca act gga ggc cac cct gtg        2064
Glu Gly Ser Arg Gly Ala Val Lys Ala Pro Thr Gly Gly His Pro Val
            675             680             685

gtt cag ctc cat ggc tac atg gaa aac aag cct ctg gga ctt cag atc        2112
Val Gln Leu His Gly Tyr Met Glu Asn Lys Pro Leu Gly Leu Gln Ile
            690             695             700

ttc att ggg aca gct gat gag cgg atc ctt aag ccg cac gcc ttc tac        2160
Phe Ile Gly Thr Ala Asp Glu Arg Ile Leu Lys Pro His Ala Phe Tyr
705             710             715             720

cag gtg cac cga atc acg ggg aaa act gtc acc acc acc agc tat gag        2208
Gln Val His Arg Ile Thr Gly Lys Thr Val Thr Thr Thr Ser Tyr Glu
            725             730             735

aag ata gtg ggc aac acc aaa gtc ctg gag atc ccc ttg gag ccc aaa        2256
Lys Ile Val Gly Asn Thr Lys Val Leu Glu Ile Pro Leu Glu Pro Lys
            740             745             750

aac aac atg agg gca acc atc gac tgt gcg ggg atc ttg aag ctt aga        2304
Asn Asn Met Arg Ala Thr Ile Asp Cys Ala Gly Ile Leu Lys Leu Arg
            755             760             765

aac gcc gac att gag ctg cgg aaa ggc gag acg gac att gga aga aag        2352
Asn Ala Asp Ile Glu Leu Arg Lys Gly Glu Thr Asp Ile Gly Arg Lys
            770             775             780

aac acg cgg gtg aga ctg gtt ttc cga gtt cac atc cca gag tcc agt        2400
Asn Thr Arg Val Arg Leu Val Phe Arg Val His Ile Pro Glu Ser Ser
785             790             795             800

ggc aga atc gtc tct tta cag act gca tct aac ccc atc gag tgc tcc        2448
Gly Arg Ile Val Ser Leu Gln Thr Ala Ser Asn Pro Ile Glu Cys Ser
            805             810             815

cag cga tct gct cac gag ctg ccc atg gtt gaa aga caa gac aca gac        2496
Gln Arg Ser Ala His Glu Leu Pro Met Val Glu Arg Gln Asp Thr Asp
            820             825             830

agc tgc ctg gtc tat ggc ggc cag caa atg atc ctc acg ggg cag aac        2544
Ser Cys Leu Val Tyr Gly Gly Gln Gln Met Ile Leu Thr Gly Gln Asn
            835             840             845

ttt aca tcc gag tcc aaa gtt gtg ttt act gag aag acc aca gat gga        2592
Phe Thr Ser Glu Ser Lys Val Val Phe Thr Glu Lys Thr Thr Asp Gly
            850             855             860

cag caa att tgg gag atg gaa gcc acg gtg gat aag gac aag agc cag        2640
Gln Gln Ile Trp Glu Met Glu Ala Thr Val Asp Lys Asp Lys Ser Gln
865             870             875             880

ccc aac atg ctt ttt gtt gag atc cct gaa tat cgg aac aag cat atc        2688
Pro Asn Met Leu Phe Val Glu Ile Pro Glu Tyr Arg Asn Lys His Ile
            885             890             895

cgc aca cct gta aaa gtg aac ttc tac gtc atc aat ggg aag aga aaa        2736
Arg Thr Pro Val Lys Val Asn Phe Tyr Val Ile Asn Gly Lys Arg Lys
            900             905             910

cga agt cag cct cag cac ttt acc tac cac cca gtc cca gcc atc aag        2784
Arg Ser Gln Pro Gln His Phe Thr Tyr His Pro Val Pro Ala Ile Lys
            915             920             925

acg gag ccc acg gat gaa tat gac ccc act ctg atc tgc agc ccc acc        2832
Thr Glu Pro Thr Asp Glu Tyr Asp Pro Thr Leu Ile Cys Ser Pro Thr
            930             935             940

cat gga ggc ctg ggg agc cag cct tac tac ccc cag cac ccg atg gtg        2880
His Gly Gly Leu Gly Ser Gln Pro Tyr Tyr Pro Gln His Pro Met Val
945             950             955             960

gcc gag tcc ccc tcc tgc ctc gtg gcc acc atg gct ccc tgc cag cag        2928
Ala Glu Ser Pro Ser Cys Leu Val Ala Thr Met Ala Pro Cys Gln Gln
            965             970             975

ttc cgc acg ggg ctc tca tcc cct gac gcc cgc tac cag caa cag aac        2976
Phe Arg Thr Gly Leu Ser Ser Pro Asp Ala Arg Tyr Gln Gln Gln Asn
            980             985             990
```

164

```
cca gcg gcc gta ctc tac cag cgg  agc aag agc ctg agc  ccc agc ctg      3024
Pro Ala Ala Val Leu Tyr Gln Arg  Ser Lys Ser Leu Ser  Pro Ser Leu
        995                  1000              1005

ctg ggc tat cag cag ccg gcc ctc atg gcc gcc ccg ctg tcc ctt          3069
Leu Gly Tyr Gln Gln Pro Ala Leu Met Ala Ala Pro Leu Ser Leu
    1010              1015              1020

gcg gac gct cac cgc tct gtg ctg gtg cac gcc ggc tcc cag ggc          3114
Ala Asp Ala His Arg Ser Val Leu Val His Ala Gly Ser Gln Gly
    1025              1030              1035

cag agc tca gcc ctg ctc cac ccc tct ccg acc aac cag cag gcc          3159
Gln Ser Ser Ala Leu Leu His Pro Ser Pro Thr Asn Gln Gln Ala
    1040              1045              1050

tcg cct gtg atc cac tac tca ccc acc aac cag cag ctg cgc tgc          3204
Ser Pro Val Ile His Tyr Ser Pro Thr Asn Gln Gln Leu Arg Cys
    1055              1060              1065

gga agc cac cag gag ttc cag cac atc atg tac tgc gag aat ttc          3249
Gly Ser His Gln Glu Phe Gln His Ile Met Tyr Cys Glu Asn Phe
    1070              1075              1080

gca cca ggc acc acc aga cct ggc ccg ccc ccg gtc agt caa ggt          3294
Ala Pro Gly Thr Thr Arg Pro Gly Pro Pro Pro Val Ser Gln Gly
    1085              1090              1095

cag agg ctg agc ccg ggt tcc tac ccc aca gtc att cag cag cag          3339
Gln Arg Leu Ser Pro Gly Ser Tyr Pro Thr Val Ile Gln Gln Gln
    1100              1105              1110

aat gcc acg agc caa aga gcc gcc aaa aac gga ccc ccg gtc agt          3384
Asn Ala Thr Ser Gln Arg Ala Ala Lys Asn Gly Pro Pro Val Ser
    1115              1120              1125

gac caa aag gaa gta tta cct gcg ggg gtg acc att aaa cag gag          3429
Asp Gln Lys Glu Val Leu Pro Ala Gly Val Thr Ile Lys Gln Glu
    1130              1135              1140

cag aac ttg gac cag acc tac ttg gat gat gtt aat gaa att atc          3474
Gln Asn Leu Asp Gln Thr Tyr Leu Asp Asp Val Asn Glu Ile Ile
    1145              1150              1155

agg aag gag ttt tca gga cct cct gcc aga aat cag acg taa          3516
Arg Lys Glu Phe Ser Gly Pro Pro Ala Arg Asn Gln Thr
    1160              1165              1170


<210>  131

<211>  1171

<212>  PRT

<213>  Artificial Sequence


<220>

<223>  EGFP-NFAT fusion

<400>  131
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5               10              15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20              25              30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35              40              45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50              55              60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65              70              75              80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
```

165

```
                    85                      90                      95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100                     105                     110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115                     120                     125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                     135                     140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                     150                     155                     160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
            165                     170                     175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                     185                     190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195                     200                     205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                     215                     220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                     230                     235                     240
Gly Leu Arg Ser Arg Ala Met Asn Ala Pro Glu Arg Gln Pro Gln Pro
            245                     250                     255
Asp Gly Gly Asp Ala Pro Gly His Glu Pro Gly Gly Ser Pro Gln Asp
            260                     265                     270
Glu Leu Asp Phe Ser Ile Leu Phe Asp Tyr Glu Tyr Leu Asn Pro Asn
        275                     280                     285
Glu Glu Glu Pro Asn Ala His Lys Val Ala Ser Pro Pro Ser Gly Pro
    290                     295                     300
Ala Tyr Pro Asp Asp Val Met Asp Tyr Gly Leu Lys Pro Tyr Ser Pro
305                     310                     315                     320
Leu Ala Ser Leu Ser Gly Glu Pro Pro Gly Arg Phe Gly Glu Pro Asp
            325                     330                     335
Arg Val Gly Pro Gln Lys Phe Leu Ser Ala Ala Lys Pro Ala Gly Ala
            340                     345                     350
Ser Gly Leu Ser Pro Arg Ile Glu Ile Thr Pro Ser His Glu Leu Ile
        355                     360                     365
Gln Ala Val Gly Pro Leu Arg Met Arg Asp Ala Gly Leu Leu Val Glu
    370                     375                     380
Gln Pro Pro Leu Ala Gly Val Ala Ala Ser Pro Arg Phe Thr Leu Pro
385                     390                     395                     400
Val Pro Gly Phe Glu Gly Tyr Arg Glu Pro Leu Cys Leu Ser Pro Ala
            405                     410                     415
Ser Ser Gly Ser Ser Ala Ser Phe Ile Ser Asp Thr Phe Ser Pro Tyr
            420                     425                     430
Thr Ser Pro Cys Val Ser Pro Asn Asn Gly Gly Pro Asp Asp Leu Cys
        435                     440                     445
Pro Gln Phe Gln Asn Ile Pro Ala His Tyr Ser Pro Arg Thr Ser Pro
    450                     455                     460
Ile Met Ser Pro Arg Thr Ser Leu Ala Glu Asp Ser Cys Leu Gly Arg
465                     470                     475                     480
His Ser Pro Val Pro Arg Pro Ala Ser Arg Ser Ser Ser Pro Gly Ala
            485                     490                     495
Lys Arg Arg His Ser Cys Ala Glu Ala Leu Val Ala Leu Pro Pro Gly
        500                     505                     510
Ala Ser Pro Gln Arg Ser Arg Ser Pro Ser Pro Gln Pro Ser Ser His
        515                     520                     525
Val Ala Pro Gln Asp His Gly Ser Pro Ala Gly Tyr Pro Pro Val Ala
        530                     535                     540
Gly Ser Ala Val Ile Met Asp Ala Leu Asn Ser Leu Ala Thr Asp Ser
545                     550                     555                     560
Pro Cys Gly Ile Pro Pro Lys Met Trp Lys Thr Ser Pro Asp Pro Ser
            565                     570                     575
Pro Val Ser Ala Ala Pro Ser Lys Ala Gly Leu Pro Arg His Ile Tyr
        580                     585                     590
```

166

```
Pro Ala Val Glu Phe Leu Gly Pro Cys Glu Gln Gly Glu Arg Arg Asn
        595                 600                 605
Ser Ala Pro Glu Ser Ile Leu Leu Val Pro Pro Thr Trp Pro Lys Pro
        610                 615                 620
Leu Val Pro Ala Ile Pro Ile Cys Ser Ile Pro Val Thr Ala Ser Leu
625                 630                 635                 640
Pro Pro Leu Glu Trp Pro Leu Ser Ser Gln Ser Gly Ser Tyr Glu Leu
                645                 650                 655
Arg Ile Glu Val Gln Pro Lys Pro His His Arg Ala His Tyr Glu Thr
                660                 665                 670
Glu Gly Ser Arg Gly Ala Val Lys Ala Pro Thr Gly Gly His Pro Val
        675                 680                 685
Val Gln Leu His Gly Tyr Met Glu Asn Lys Pro Leu Gly Leu Gln Ile
        690                 695                 700
Phe Ile Gly Thr Ala Asp Glu Arg Ile Leu Lys Pro His Ala Phe Tyr
705                 710                 715                 720
Gln Val His Arg Ile Thr Gly Lys Thr Val Thr Thr Thr Ser Tyr Glu
                725                 730                 735
Lys Ile Val Gly Asn Thr Lys Val Leu Glu Ile Pro Leu Glu Pro Lys
                740                 745                 750
Asn Asn Met Arg Ala Thr Ile Asp Cys Ala Gly Ile Leu Lys Leu Arg
        755                 760                 765
Asn Ala Asp Ile Glu Leu Arg Lys Gly Glu Thr Asp Ile Gly Arg Lys
        770                 775                 780
Asn Thr Arg Val Arg Leu Val Phe Arg Val His Ile Pro Glu Ser Ser
785                 790                 795                 800
Gly Arg Ile Val Ser Leu Gln Thr Ala Ser Asn Pro Ile Glu Cys Ser
                805                 810                 815
Gln Arg Ser Ala His Glu Leu Pro Met Val Glu Arg Gln Asp Thr Asp
        820                 825                 830
Ser Cys Leu Val Tyr Gly Gly Gln Gln Met Ile Leu Thr Gly Gln Asn
        835                 840                 845
Phe Thr Ser Glu Ser Lys Val Val Phe Thr Glu Lys Thr Thr Asp Gly
        850                 855                 860
Gln Gln Ile Trp Glu Met Glu Ala Thr Val Asp Lys Asp Lys Ser Gln
865                 870                 875                 880
Pro Asn Met Leu Phe Val Glu Ile Pro Glu Tyr Arg Asn Lys His Ile
                885                 890                 895
Arg Thr Pro Val Lys Val Asn Phe Tyr Val Ile Asn Gly Lys Arg Lys
                900                 905                 910
Arg Ser Gln Pro Gln His Phe Thr Tyr His Pro Val Pro Ala Ile Lys
        915                 920                 925
Thr Glu Pro Thr Asp Glu Tyr Asp Pro Thr Leu Ile Cys Ser Pro Thr
        930                 935                 940
His Gly Gly Leu Gly Ser Gln Pro Tyr Tyr Pro Gln His Pro Met Val
945                 950                 955                 960
Ala Glu Ser Pro Ser Cys Leu Val Ala Thr Met Ala Pro Cys Gln Gln
                965                 970                 975
Phe Arg Thr Gly Leu Ser Ser Pro Asp Ala Arg Tyr Gln Gln Gln Asn
                980                 985                 990
Pro Ala Ala Val Leu Tyr Gln Arg  Ser Lys Ser Leu Ser  Pro Ser Leu
        995                 1000                1005
Leu Gly  Tyr Gln Gln Pro Ala  Leu Met Ala Ala Pro  Leu Ser Leu
    1010                1015                1020
Ala Asp  Ala His Arg Ser Val  Leu Val His Ala Gly  Ser Gln Gly
    1025                1030                1035
Gln Ser  Ser Ala Leu Leu His  Pro Ser Pro Thr Asn  Gln Gln Ala
    1040                1045                1050
Ser Pro  Val Ile His Tyr Ser  Pro Thr Asn Gln Gln  Leu Arg Cys
    1055                1060                1065
Gly Ser  His Gln Glu Phe Gln  His Ile Met Tyr Cys  Glu Asn Phe
    1070                1075                1080
Ala Pro  Gly Thr Thr Arg Pro  Gly Pro Pro Pro Val  Ser Gln Gly
```

167

```
              1085                         1090                         1095
Gln Arg Leu Ser Pro Gly Ser Tyr Pro Thr Val Ile Gln Gln Gln
              1100                         1105                         1110
Asn Ala Thr Ser Gln Arg Ala Ala Lys Asn Gly Pro Pro Val Ser
              1115                         1120                         1125
Asp Gln Lys Glu Val Leu Pro Ala Gly Val Thr Ile Lys Gln Glu
              1130                         1135                         1140
Gln Asn Leu Asp Gln Thr Tyr Leu Asp Asp Val Asn Glu Ile Ile
              1145                         1150                         1155
Arg Lys Glu Phe Ser Gly Pro Pro Ala Arg Asn Gln Thr
              1160                         1165                         1170
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<210> 132

<211> 3546

<212> DNA

<213> Artificial Sequence

<220>

<223> NFAT-EGFP fusion

<220>

<221> CDS

<222> (1)..(3543)

<400> 132
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atg aac gcc ccc gag cgg cag ccc caa ccc gac ggc ggg gac gcc cca        48
Met Asn Ala Pro Glu Arg Gln Pro Gln Pro Asp Gly Gly Asp Ala Pro
1               5                   10                  15
ggc cac gag cct ggg ggc agc ccc caa gac gag ctt gac ttc tcc atc        96
Gly His Glu Pro Gly Gly Ser Pro Gln Asp Glu Leu Asp Phe Ser Ile
                20                  25                  30
ctc ttc gac tat gag tat ttg aat ccg aac gaa gaa gag ccg aat gca       144
Leu Phe Asp Tyr Glu Tyr Leu Asn Pro Asn Glu Glu Glu Pro Asn Ala
            35                  40                  45
cat aag gtc gcc agc cca ccc tcc gga ccc gca tac ccc gat gat gta       192
His Lys Val Ala Ser Pro Pro Ser Gly Pro Ala Tyr Pro Asp Asp Val
        50                  55                  60
atg gac tat ggc ctc aag cca tac agc ccc ctt gct agt ctc tct ggc       240
Met Asp Tyr Gly Leu Lys Pro Tyr Ser Pro Leu Ala Ser Leu Ser Gly
65                  70                  75                  80
gag ccc ccc ggc cga ttc gga gag ccg gat agg gta ggg ccg cag aag       288
Glu Pro Pro Gly Arg Phe Gly Glu Pro Asp Arg Val Gly Pro Gln Lys
                85                  90                  95
ttt ctg agc gcg gcc aag cca gca ggg gcc tcg ggc ctg agc cct cgg       336
Phe Leu Ser Ala Ala Lys Pro Ala Gly Ala Ser Gly Leu Ser Pro Arg
                100                 105                 110
atc gag atc act ccg tcc cac gaa ctg atc cag gca gtg ggg ccc ctc       384
Ile Glu Ile Thr Pro Ser His Glu Leu Ile Gln Ala Val Gly Pro Leu
            115                 120                 125
cgc atg aga gac gcg ggc ctc ctg gtg gag cag cct ccc ctg gcc ggg       432
Arg Met Arg Asp Ala Gly Leu Leu Val Glu Gln Pro Pro Leu Ala Gly
        130                 135                 140
```

168

```
gtg gcc gcc agc ccg agg ttc acc ctg ccc gtg ccc ggc ttc gag ggc      480
Val Ala Ala Ser Pro Arg Phe Thr Leu Pro Val Pro Gly Phe Glu Gly
145                 150                 155                 160
tac cgc gag ccg ctt tgc ttg agc ccc gct agc agc ggc tcc tct gcc      528
Tyr Arg Glu Pro Leu Cys Leu Ser Pro Ala Ser Ser Gly Ser Ser Ala
                165                 170                 175
agc ttc att tct gac acc ttc tcc ccc tac acc tcg ccc tgc gtc tcg      576
Ser Phe Ile Ser Asp Thr Phe Ser Pro Tyr Thr Ser Pro Cys Val Ser
                180                 185                 190
ccc aat aac ggc ggg ccc gac gac ctg tgt ccg cag ttt caa aac atc      624
Pro Asn Asn Gly Gly Pro Asp Asp Leu Cys Pro Gln Phe Gln Asn Ile
            195                 200                 205
cct gct cat tat tcc ccc aga acc tcg cca ata atg tca cct cga acc      672
Pro Ala His Tyr Ser Pro Arg Thr Ser Pro Ile Met Ser Pro Arg Thr
        210                 215                 220
agc ctc gcc gag gac agc tgc ctg ggc cgc cac tcg ccc gtg ccc cgt      720
Ser Leu Ala Glu Asp Ser Cys Leu Gly Arg His Ser Pro Val Pro Arg
225                 230                 235                 240
ccg gcc tcc cgc tcc tca tcg cct ggt gcc aag cgg agg cat tcg tgc      768
Pro Ala Ser Arg Ser Ser Ser Pro Gly Ala Lys Arg Arg His Ser Cys
                245                 250                 255
gcc gag gcc ttg gtt gcc ctg ccg ccc gga gcc tca ccc cag cgc tcc      816
Ala Glu Ala Leu Val Ala Leu Pro Pro Gly Ala Ser Pro Gln Arg Ser
                260                 265                 270
cgg agc ccc tcg ccg cag ccc tca tct cac gtg gca ccc cag gac cac      864
Arg Ser Pro Ser Pro Gln Pro Ser Ser His Val Ala Pro Gln Asp His
                275                 280                 285
ggc tcc ccg gct ggg tac ccc cct gtg gct ggc tct gcc gtg atc atg      912
Gly Ser Pro Ala Gly Tyr Pro Pro Val Ala Gly Ser Ala Val Ile Met
            290                 295                 300
gat gcc ctg aac agc ctc gcc acg gac tcg cct tgt ggg atc ccc ccc      960
Asp Ala Leu Asn Ser Leu Ala Thr Asp Ser Pro Cys Gly Ile Pro Pro
305                 310                 315                 320
aag atg tgg aag acc agc cct gac ccc tcg ccg gtg tct gcc gcc cca      1008
Lys Met Trp Lys Thr Ser Pro Asp Pro Ser Pro Val Ser Ala Ala Pro
                325                 330                 335
tcc aag gcc ggc ctg cct cgc cac atc tac ccg gcc gtg gag ttc ctg      1056
Ser Lys Ala Gly Leu Pro Arg His Ile Tyr Pro Ala Val Glu Phe Leu
                340                 345                 350
ggg ccc tgc gag cag ggc gag agg aga aac tcg gct cca gaa tcc atc      1104
Gly Pro Cys Glu Gln Gly Glu Arg Arg Asn Ser Ala Pro Glu Ser Ile
                355                 360                 365
ctg ctg gtt ccg ccc act tgg ccc aag ccg ctg gtg cct gcc att ccc      1152
Leu Leu Val Pro Pro Thr Trp Pro Lys Pro Leu Val Pro Ala Ile Pro
        370                 375                 380
atc tgc agc atc cca gtg act gca tcc ctc cct cca ctt gag tgg ccg      1200
Ile Cys Ser Ile Pro Val Thr Ala Ser Leu Pro Pro Leu Glu Trp Pro
385                 390                 395                 400
ctg tcc agt cag tca ggc tct tac gag ctg cgg atc gag gtg cag ccc      1248
Leu Ser Ser Gln Ser Gly Ser Tyr Glu Leu Arg Ile Glu Val Gln Pro
                405                 410                 415
aag cca cat cac cgg gcc cac tat gag aca gaa ggc agc cga ggg gct      1296
Lys Pro His His Arg Ala His Tyr Glu Thr Glu Gly Ser Arg Gly Ala
                420                 425                 430
gtc aaa gct cca act gga ggc cac cct gtg gtt cag ctc cat ggc tac      1344
Val Lys Ala Pro Thr Gly Gly His Pro Val Val Gln Leu His Gly Tyr
                435                 440                 445
atg gaa aac aag cct ctg gga ctt cag atc ttc att ggg aca gct gat      1392
Met Glu Asn Lys Pro Leu Gly Leu Gln Ile Phe Ile Gly Thr Ala Asp
        450                 455                 460
gag cgg atc ctt aag ccg cac gcc ttc tac cag gtg cac cga atc acg      1440
Glu Arg Ile Leu Lys Pro His Ala Phe Tyr Gln Val His Arg Ile Thr
465                 470                 475                 480
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169

```
ggg aaa act gtc acc acc acc agc tat gag aag ata gtg ggc aac acc         1488
Gly Lys Thr Val Thr Thr Thr Ser Tyr Glu Lys Ile Val Gly Asn Thr
            485                     490                     495
aaa gtc ctg gag atc ccc ttg gag ccc aaa aac aac atg agg gca acc         1536
Lys Val Leu Glu Ile Pro Leu Glu Pro Lys Asn Asn Met Arg Ala Thr
            500                     505                     510
atc gac tgt gcg ggg atc ttg aag ctt aga aac gcc gac att gag ctg         1584
Ile Asp Cys Ala Gly Ile Leu Lys Leu Arg Asn Ala Asp Ile Glu Leu
            515                     520                     525
cgg aaa ggc gag acg gac att gga aga aag aac acg cgg gtg aga ctg         1632
Arg Lys Gly Glu Thr Asp Ile Gly Arg Lys Asn Thr Arg Val Arg Leu
            530                     535                     540
gtt ttc cga gtt cac atc cca gag tcc agt ggc aga atc gtc tct tta         1680
Val Phe Arg Val His Ile Pro Glu Ser Ser Gly Arg Ile Val Ser Leu
545                     550                     555                 560
cag act gca tct aac ccc atc gag tgc tcc cag cga tct gct cac gag         1728
Gln Thr Ala Ser Asn Pro Ile Glu Cys Ser Gln Arg Ser Ala His Glu
                565                     570                     575
ctg ccc atg gtt gaa aga caa gac aca gac agc tgc ctg gtc tat ggc         1776
Leu Pro Met Val Glu Arg Gln Asp Thr Asp Ser Cys Leu Val Tyr Gly
                580                     585                     590
ggc cag caa atg atc ctc acg ggg cag aac ttt aca tcc gag tcc aaa         1824
Gly Gln Gln Met Ile Leu Thr Gly Gln Asn Phe Thr Ser Glu Ser Lys
                595                     600                     605
gtt gtg ttt act gag aag acc aca gat gga cag caa att tgg gag atg         1872·
Val Val Phe Thr Glu Lys Thr Thr Asp Gly Gln Gln Ile Trp Glu Met
            610                     615                     620
gaa gcc acg gtg gat aag gac aag agc cag ccc aac atg ctt ttt gtt         1920
Glu Ala Thr Val Asp Lys Asp Lys Ser Gln Pro Asn Met Leu Phe Val
625                     630                     635                 640
gag atc cct gaa tat cgg aac aag cat atc cgc aca cct gta aaa gtg         1968
Glu Ile Pro Glu Tyr Arg Asn Lys His Ile Arg Thr Pro Val Lys Val
                645                     650·                    655
aac ttc tac gtc atc aat ggg aag aga aaa cga agt cag cct cag cac         2016
Asn Phe Tyr Val Ile Asn Gly Lys Arg Lys Arg Ser Gln Pro Gln His
                660                     665                     670
ttt acc tac cac cca gtc cca gcc atc aag acg gag ccc acg gat gaa         2064
Phe Thr Tyr His Pro Val Pro Ala Ile Lys Thr Glu Pro Thr Asp Glu
                675                     680                     685
tat gac ccc act ctg atc tgc agc ccc acc cat gga ggc ctg ggg agc         2112
Tyr Asp Pro Thr Leu Ile Cys Ser Pro Thr His Gly Gly Leu Gly Ser
            690                     695                     700
cag cct tac tac ccc cag cac ccg atg gtg gcc gag tcc ccc tcc tgc         2160
Gln Pro Tyr Tyr Pro Gln His Pro Met Val Ala Glu Ser Pro Ser Cys
705                     710                     715                 720
ctc gtg gcc acc atg gct ccc tgc cag cag ttc cgc acg ggg ctc tca         2208
Leu Val Ala Thr Met Ala Pro Cys Gln Gln Phe Arg Thr Gly Leu Ser
                725                     730                     735
tcc cct gac gcc cgc tac cag caa cag aac cca gcg gcc gta ctc tac         2256
Ser Pro Asp Ala Arg Tyr Gln Gln Gln Asn Pro Ala Ala Val Leu Tyr
                740                     745                     750
cag cgg agc aag agc ctg agc ccc agc ctg ctg ggc tat cag cag ccg         2304
Gln Arg Ser Lys Ser Leu Ser Pro Ser Leu Leu Gly Tyr Gln Gln Pro
                755                     760                     765
gcc ctc atg gcc gcc ccg ctg tcc ctt gcg gac gct cac cgc tct gtg         2352
Ala Leu Met Ala Ala Pro Leu Ser Leu Ala Asp Ala His Arg Ser Val
            770                     775                     780
ctg gtg cac gcc ggc tcc cag ggc cag agc tca gcc ctg ctc cac ccc         2400
Leu Val His Ala Gly Ser Gln Gly Gln Ser Ser Ala Leu Leu His Pro
785                     790                     795                 800
tct ccg acc aac cag cag gcc tcg cct gtg atc cac tac tca ccc acc         2448
Ser Pro Thr Asn Gln Gln Ala Ser Pro Val Ile His Tyr Ser Pro Thr
                805                     810                     815
```

170

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aac cag cag ctg cgc tgc gga agc cac cag gag ttc cag cac atc atg      2496
Asn Gln Gln Leu Arg Cys Gly Ser His Gln Glu Phe Gln His Ile Met
        820                 825                 830
tac tgc gag aat ttc gca cca ggc acc acc aga cct ggc ccg ccc ccg      2544
Tyr Cys Glu Asn Phe Ala Pro Gly Thr Thr Arg Pro Gly Pro Pro Pro
        835                 840                 845
gtc agt caa ggt cag agg ctg agc ccg ggt tcc tac ccc aca gtc att      2592
Val Ser Gln Gly Gln Arg Leu Ser Pro Gly Ser Tyr Pro Thr Val Ile
        850                 855                 860
cag cag cag aat gcc acg agc caa aga gcc gcc aaa aac gga ccc ccg      2640
Gln Gln Gln Asn Ala Thr Ser Gln Arg Ala Ala Lys Asn Gly Pro Pro
865                 870                 875                 880
gtc agt gac caa aag gaa gta tta cct gcg ggg gtg acc att aaa cag      2688
Val Ser Asp Gln Lys Glu Val Leu Pro Ala Gly Val Thr Ile Lys Gln
                885                 890                 895
gag cag aac ttg gac cag acc tac ttg gat gat gtt aat gaa att atc      2736
Glu Gln Asn Leu Asp Gln Thr Tyr Leu Asp Asp Val Asn Glu Ile Ile
                900                 905                 910
agg aag gag ttt tca gga cct cct gcc aga aat cag acg aga att ctg      2784
Arg Lys Glu Phe Ser Gly Pro Pro Ala Arg Asn Gln Thr Arg Ile Leu
                915                 920                 925
cag tcg acg gta ccg cgg gcc cgg gat cca ccg gtc gcc acc atg gtg      2832
Gln Ser Thr Val Pro Arg Ala Arg Asp Pro Pro Val Ala Thr Met Val
                930                 935                 940
agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc gag      2880
Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu
945                 950                 955                 960
ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag ggc      2928
Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly
                965                 970                 975
gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc acc      2976
Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr
                980                 985                 990
acc ggc aag ctg ccc gtg ccc tgg  ccc acc ctc gtg acc  acc ctg acc   3024
Thr Gly Lys Leu Pro Val Pro Trp  Pro Thr Leu Val Thr  Thr Leu Thr
                995                 1000                1005
tac ggc gtg cag tgc ttc agc  cgc tac ccc gac cac  atg aag cag        3069
Tyr Gly Val Gln Cys Phe Ser  Arg Tyr Pro Asp His  Met Lys Gln
        1010                1015                1020
cac gac ttc ttc aag tcc gcc  atg ccc gaa ggc tac  gtc cag gag        3114
His Asp Phe Phe Lys Ser Ala  Met Pro Glu Gly Tyr  Val Gln Glu
        1025                1030                1035
cgc acc atc ttc ttc aag gac  gac ggc aac tac aag  acc cgc gcc        3159
Arg Thr Ile Phe Phe Lys Asp  Asp Gly Asn Tyr Lys  Thr Arg Ala
        1040                1045                1050
gag gtg aag ttc gag ggc gac  acc ctg gtg aac cgc  atc gag ctg        3204
Glu Val Lys Phe Glu Gly Asp  Thr Leu Val Asn Arg  Ile Glu Leu
        1055                1060                1065
aag ggc atc gac ttc aag gag  gac ggc aac atc ctg  ggg cac aag        3249
Lys Gly Ile Asp Phe Lys Glu  Asp Gly Asn Ile Leu  Gly His Lys
        1070                1075                1080
ctg gag tac aac tac aac agc  cac aac gtc tat atc  atg gcc gac        3294
Leu Glu Tyr Asn Tyr Asn Ser  His Asn Val Tyr Ile  Met Ala Asp
        1085                1090                1095
aag cag aag aac ggc atc aag  gtg aac ttc aag atc  cgc cac aac        3339
Lys Gln Lys Asn Gly Ile Lys  Val Asn Phe Lys Ile  Arg His Asn
        1100                1105                1110
atc gag gac ggc agc gtg cag  ctc gcc gac cac tac  cag cag aac        3384
Ile Glu Asp Gly Ser Val Gln  Leu Ala Asp His Tyr  Gln Gln Asn
        1115                1120                1125
acc ccc atc ggc gac ggc ccc  gtg ctg ctg ccc gac  aac cac tac        3429
Thr Pro Ile Gly Asp Gly Pro  Val Leu Leu Pro Asp  Asn His Tyr
        1130                1135                1140
```

171

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ctg  agc  acc  cag  tcc  gcc  ctg   agc  aaa  gac  ccc  aac   gag  aag  cgc         3474
Leu  Ser  Thr  Gln  Ser  Ala  Leu   Ser  Lys  Asp  Pro  Asn   Glu  Lys  Arg
     1145                1150                     1155
gat  cac  atg  gtc  ctg  ctg  gag   ttc  gtg  acc  gcc  gcc   ggg  atc  act         3519
Asp  His  Met  Val  Leu  Leu  Glu   Phe  Val  Thr  Ala  Ala   Gly  Ile  Thr
     1160                1165                     1170
ctc  ggc  atg  gac  gag  ctg  tac   aag  taa                                         3546
Leu  Gly  Met  Asp  Glu  Leu  Tyr   Lys
     1175                1180
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<210> 133

<211> 1181

<212> PRT

<213> Artificial Sequence

<220>

<223> NFAT-EGFP fusion


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<400>  133
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1               5                   10                  15
Gly His Glu Pro Gly Gly Ser Pro Gln Asp Glu Leu Asp Phe Ser Ile
            20                  25                  30
Leu Phe Asp Tyr Glu Tyr Leu Asn Pro Asn Glu Glu Glu Pro Asn Ala
        35                  40                  45
His Lys Val Ala Ser Pro Pro Ser Gly Pro Ala Tyr Pro Asp Asp Val
    50                  55                  60
Met Asp Tyr Gly Leu Lys Pro Tyr Ser Pro Leu Ala Ser Leu Ser Gly
65                  70                  75                  80
Glu Pro Pro Gly Arg Phe Gly Glu Pro Asp Arg Val Gly Pro Gln Lys
                85                  90                  95
Phe Leu Ser Ala Ala Lys Pro Ala Gly Ala Ser Gly Leu Ser Pro Arg
            100                 105                 110
Ile Glu Ile Thr Pro Ser His Glu Leu Ile Gln Ala Val Gly Pro Leu
        115                 120                 125
Arg Met Arg Asp Ala Gly Leu Leu Val Glu Gln Pro Pro Leu Ala Gly
    130                 135                 140
Val Ala Ala Ser Pro Arg Phe Thr Leu Pro Val Pro Gly Phe Glu Gly
145                 150                 155                 160
Tyr Arg Glu Pro Leu Cys Leu Ser Pro Ala Ser Ser Gly Ser Ser Ala
                165                 170                 175
Ser Phe Ile Ser Asp Thr Phe Ser Pro Tyr Thr Ser Pro Cys Val Ser
            180                 185                 190
Pro Asn Asn Gly Gly Pro Asp Asp Leu Cys Pro Gln Phe Gln Asn Ile
            195                 200                 205
Pro Ala His Tyr Ser Pro Arg Thr Ser Pro Ile Met Ser Pro Arg Thr
    210                 215                 220
Ser Leu Ala Glu Asp Ser Cys Leu Gly Arg His Ser Pro Val Pro Arg
225                 230                 235                 240
Pro Ala Ser Arg Ser Ser Ser Pro Gly Ala Lys Arg Arg His Ser Cys
                245                 250                 255
Ala Glu Ala Leu Val Ala Leu Pro Pro Gly Ala Ser Pro Gln Arg Ser
            260                 265                 270
Arg Ser Pro Ser Pro Gln Pro Ser Ser His Val Ala Pro Gln Asp His
    275                 280                 285
Gly Ser Pro Ala Gly Tyr Pro Pro Val Ala Gly Ser Ala Val Ile Met
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172

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            290                     295                     300
Asp Ala Leu Asn Ser Leu Ala Thr Asp Ser Pro Cys Gly Ile Pro Pro
305                     310                     315                     320
Lys Met Trp Lys Thr Ser Pro Asp Pro Ser Pro Val Ser Ala Ala Pro
                325                     330                     335
Ser Lys Ala Gly Leu Pro Arg His Ile Tyr Pro Ala Val Glu Phe Leu
                340                     345                     350
Gly Pro Cys Glu Gln Gly Glu Arg Arg Asn Ser Ala Pro Glu Ser Ile
                355                     360                     365
Leu Leu Val Pro Pro Thr Trp Pro Lys Pro Leu Val Pro Ala Ile Pro
        370                     375                     380
Ile Cys Ser Ile Pro Val Thr Ala Ser Leu Pro Pro Leu Glu Trp Pro
385                     390                     395                     400
Leu Ser Ser Gln Ser Gly Ser Tyr Glu Leu Arg Ile Glu Val Gln Pro
                405                     410                     415
Lys Pro His His Arg Ala His Tyr Glu Thr Glu Gly Ser Arg Gly Ala
                420                     425                     430
Val Lys Ala Pro Thr Gly Gly His Pro Val Val Gln Leu His Gly Tyr
        435                     440                     445
Met Glu Asn Lys Pro Leu Gly Leu Gln Ile Phe Ile Gly Thr Ala Asp
        450                     455                     460
Glu Arg Ile Leu Lys Pro His Ala Phe Tyr Gln Val His Arg Ile Thr
465                     470                     475                     480
Gly Lys Thr Val Thr Thr Thr Ser Tyr Glu Lys Ile Val Gly Asn Thr
                485                     490                     495
Lys Val Leu Glu Ile Pro Leu Glu Pro Lys Asn Asn Met Arg Ala Thr
                500                     505                     510
Ile Asp Cys Ala Gly Ile Leu Lys Leu Arg Asn Ala Asp Ile Glu Leu
        515                     520                     525
Arg Lys Gly Glu Thr Asp Ile Gly Arg Lys Asn Thr Arg Val Arg Leu
        530                     535                     540
Val Phe Arg Val His Ile Pro Glu Ser Ser Gly Arg Ile Val Ser Leu
545                     550                     555                     560
Gln Thr Ala Ser Asn Pro Ile Glu Cys Ser Gln Arg Ser Ala His Glu
                565                     570                     575
Leu Pro Met Val Glu Arg Gln Asp Thr Asp Ser Cys Leu Val Tyr Gly
                580                     585                     590
Gly Gln Gln Met Ile Leu Thr Gly Gln Asn Phe Thr Ser Glu Ser Lys
                595                     600                     605
Val Val Phe Thr Glu Lys Thr Thr Asp Gly Gln Gln Ile Trp Glu Met
        610                     615                     620
Glu Ala Thr Val Asp Lys Asp Lys Ser Gln Pro Asn Met Leu Phe Val
625                     630                     635                     640
Glu Ile Pro Glu Tyr Arg Asn Lys His Ile Arg Thr Pro Val Lys Val
                645                     650                     655
Asn Phe Tyr Val Ile Asn Gly Lys Arg Lys Arg Ser Gln Pro Gln His
                660                     665                     670
Phe Thr Tyr His Pro Val Pro Ala Ile Lys Thr Glu Pro Thr Asp Glu
        675                     680                     685
Tyr Asp Pro Thr Leu Ile Cys Ser Pro Thr His Gly Gly Leu Gly Ser
        690                     695                     700
Gln Pro Tyr Tyr Pro Gln His Pro Met Val Ala Glu Ser Pro Ser Cys
705                     710                     715                     720
Leu Val Ala Thr Met Ala Pro Cys Gln Gln Phe Arg Thr Gly Leu Ser
                725                     730                     735
Ser Pro Asp Ala Arg Tyr Gln Gln Gln Asn Pro Ala Ala Val Leu Tyr
                740                     745                     750
Gln Arg Ser Lys Ser Leu Ser Pro Ser Leu Leu Gly Tyr Gln Gln Pro
                755                     760                     765
Ala Leu Met Ala Ala Pro Leu Ser Leu Ala Asp Ala His Arg Ser Val
        770                     775                     780
Leu Val His Ala Gly Ser Gln Gly Gln Ser Ser Ala Leu Leu His Pro
785                     790                     795                     800
```

173

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Ser Pro Thr Asn Gln Gln Ala Ser Pro Val Ile His Tyr Ser Pro Thr
              805                     810              815
Asn Gln Gln Leu Arg Cys Gly Ser His Gln Glu Phe Gln His Ile Met
          820                 825                 830
Tyr Cys Glu Asn Phe Ala Pro Gly Thr Thr Arg Pro Gly Pro Pro Pro
      835                 840                 845
Val Ser Gln Gly Gln Arg Leu Ser Pro Gly Ser Tyr Pro Thr Val Ile
  850                 855                 860
Gln Gln Gln Asn Ala Thr Ser Gln Arg Ala Ala Lys Asn Gly Pro Pro
865                 870                 875                 880
Val Ser Asp Gln Lys Glu Val Leu Pro Ala Gly Val Thr Ile Lys Gln
              885                 890                 895
Glu Gln Asn Leu Asp Gln Thr Tyr Leu Asp Asp Val Asn Glu Ile Ile
          900                 905                 910
Arg Lys Glu Phe Ser Gly Pro Pro Ala Arg Asn Gln Thr Arg Ile Leu
          915                 920                 925
Gln Ser Thr Val Pro Arg Ala Arg Asp Pro Pro Val Ala Thr Met Val
  930                 935                 940
Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu
945                 950                 955                 960
Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly
              965                 970                 975
Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr
          980                 985                 990
Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr  Thr Leu Thr
          995             1000                1005
Tyr Gly  Val Gln Cys Phe Ser  Arg Tyr Pro Asp His  Met Lys Gln
   1010             1015             1020
His Asp  Phe Phe Lys Ser Ala  Met Pro Glu Gly Tyr  Val Gln Glu
   1025             1030             1035
Arg Thr  Ile Phe Phe Lys Asp  Asp Gly Asn Tyr Lys  Thr Arg Ala
   1040             1045             1050
Glu Val  Lys Phe Glu Gly Asp  Thr Leu Val Asn Arg  Ile Glu Leu
   1055             1060             1065
Lys Gly  Ile Asp Phe Lys Glu  Asp Gly Asn Ile Leu  Gly His Lys
   1070             1075             1080
Leu Glu  Tyr Asn Tyr Asn Ser  His Asn Val Tyr Ile  Met Ala Asp
   1085             1090             1095
Lys Gln  Lys Asn Gly Ile Lys  Val Asn Phe Lys Ile  Arg His Asn
   1100             1105             1110
Ile Glu  Asp Gly Ser Val Gln  Leu Ala Asp His Tyr  Gln Gln Asn
   1115             1120             1125
Thr Pro  Ile Gly Asp Gly Pro  Val Leu Leu Pro Asp  Asn His Tyr
   1130             1135             1140
Leu Ser  Thr Gln Ser Ala Leu  Ser Lys Asp Pro Asn  Glu Lys Arg
   1145             1150             1155
Asp His  Met Val Leu Leu Glu  Phe Val Thr Ala Ala  Gly Ile Thr
   1160             1165             1170
Leu Gly  Met Asp Glu Leu Tyr  Lys
   1175             1180
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<210>   134

<211>   2802

<212>   DNA

<213>   Artificial Sequence

174

<220>

<223> EGFP-PKG fusion

<220>

<221> CDS

<222> (1)..(2799)

<400> 134

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Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc      96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc     144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc     192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag     240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag     288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag     336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100                 105                 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc     384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
            115                 120                 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac     432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                 135                 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac     480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc     528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc     576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg     624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
            195                 200                 205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc     672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
        210                 215                 220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc     720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
gga ctc aga tct cga ggg agc atg ggc acc ttg cgg gat tta cag tac     768
Gly Leu Arg Ser Arg Gly Ser Met Gly Thr Leu Arg Asp Leu Gln Tyr
                245                 250                 255
gcg ctc cag gag aag atc gag gag ctg agg cag cgg gat gct ctc atc     816
Ala Leu Gln Glu Lys Ile Glu Glu Leu Arg Gln Arg Asp Ala Leu Ile
```

175

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                 260                      265                      270
gac gag ctg gag ctg gag ttg gat cag aag gac gaa ctg atc cag aag     864
Asp Glu Leu Glu Leu Glu Leu Asp Gln Lys Asp Glu Leu Ile Gln Lys
             275                      280                      285
ctg cag aac gag ctg gac aag tac cgc tcg gtg atc cga cca gcc acc     912
Leu Gln Asn Glu Leu Asp Lys Tyr Arg Ser Val Ile Arg Pro Ala Thr
         290                      295                      300
cag cag gcg cag aag cag agc gcg agc acc ttg cag ggc gag ccg cgc     960
Gln Gln Ala Gln Lys Gln Ser Ala Ser Thr Leu Gln Gly Glu Pro Arg
305                      310                      315                      320
acc aag cgg cag gcg atc tcc gcc gag ccc acc gcc ttc gac atc cag    1008
Thr Lys Arg Gln Ala Ile Ser Ala Glu Pro Thr Ala Phe Asp Ile Gln
                 325                      330                      335
gat ctc agc cat gtg acc ctg ccc ttc tac ccc aag agc cca cag tcc    1056
Asp Leu Ser His Val Thr Leu Pro Phe Tyr Pro Lys Ser Pro Gln Ser
             340                      345                      350
aag gat ctt ata aag gaa gct atc ctt gac aat gac ttt atg aag aac    1104
Lys Asp Leu Ile Lys Glu Ala Ile Leu Asp Asn Asp Phe Met Lys Asn
             355                      360                      365
ttg gag ctg tcg cag atc cag gag att gtg gat tgt atg tac ccg gtg    1152
Leu Glu Leu Ser Gln Ile Gln Glu Ile Val Asp Cys Met Tyr Pro Val
         370                      375                      380
gag tat ggc aag gac agt tgc atc atc aaa gaa gga gac gtg ggg tca    1200
Glu Tyr Gly Lys Asp Ser Cys Ile Ile Lys Glu Gly Asp Val Gly Ser
385                      390                      395                      400
ctg gtg tat gtc atg gaa gat ggt aag gtt gaa gtt aca aaa gaa ggt    1248
Leu Val Tyr Val Met Glu Asp Gly Lys Val Glu Val Thr Lys Glu Gly
                 405                      410                      415
gtg aag ttg tgt acc atg ggt cca gga aaa gtg ttt ggg gaa ttg gct    1296
Val Lys Leu Cys Thr Met Gly Pro Gly Lys Val Phe Gly Glu Leu Ala
             420                      425                      430
att ctt tac aac tgt acc cgg aca gcg acc gtc aag act ctt gta aat    1344
Ile Leu Tyr Asn Cys Thr Arg Thr Ala Thr Val Lys Thr Leu Val Asn
             435                      440                      445
gta aaa ctc tgg gcc att gat cga caa tgt ttt caa aca ata atg atg    1392
Val Lys Leu Trp Ala Ile Asp Arg Gln Cys Phe Gln Thr Ile Met Met
             450                      455                      460
agg aca gga ctc atc aag cat acc gag tat atg gaa ttt tta aaa agc    1440
Arg Thr Gly Leu Ile Lys His Thr Glu Tyr Met Glu Phe Leu Lys Ser
465                      470                      475                      480
gtt cca aca ttc cag agc ctt cct gaa gag atc ctc agc aag ctt gct    1488
Val Pro Thr Phe Gln Ser Leu Pro Glu Glu Ile Leu Ser Lys Leu Ala
                 485                      490                      495
gat gtc ctt gaa gag acc cac tat gaa aat gga gaa tat att atc agg    1536
Asp Val Leu Glu Glu Thr His Tyr Glu Asn Gly Glu Tyr Ile Ile Arg
             500                      505                      510
caa ggt gca aga ggg gac acc ttc ttt atc atc agc aaa gga acg gta    1584
Gln Gly Ala Arg Gly Asp Thr Phe Phe Ile Ile Ser Lys Gly Thr Val
             515                      520                      525
aat gtc act cgt gaa gac tca ccg agt gaa gac cca gtc ttt ctt aga    1632
Asn Val Thr Arg Glu Asp Ser Pro Ser Glu Asp Pro Val Phe Leu Arg
         530                      535                      540
act tta gga aaa gga gac tgg ttt gga gag aaa gcc ttg cag ggg gaa    1680
Thr Leu Gly Lys Gly Asp Trp Phe Gly Glu Lys Ala Leu Gln Gly Glu
545                      550                      555                      560
gat gtg aga aca gca aac gta att gct gca gaa gct gta acc tgc ctt    1728
Asp Val Arg Thr Ala Asn Val Ile Ala Ala Glu Ala Val Thr Cys Leu
             565                      570                      575
gtg att gac aga gac tct ttt aaa cat ttg att gga ggg ctg gat gat    1776
Val Ile Asp Arg Asp Ser Phe Lys His Leu Ile Gly Gly Leu Asp Asp
             580                      585                      590
gtt tct aat aaa gca tat gaa gat gca gaa gct aaa gca aaa tat gaa    1824
Val Ser Asn Lys Ala Tyr Glu Asp Ala Glu Ala Lys Ala Lys Tyr Glu
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176

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                595                      600                      605
gct gaa gcg gct ttc ttc gcc aac ctg aag ctg tct gat ttc aac atc    1872
Ala Glu Ala Ala Phe Phe Ala Asn Leu Lys Leu Ser Asp Phe Asn Ile
    610                      615                      620
att gat acc ctt gga gtt gga ggt ttc gga cga gta gaa ctg gtc cag    1920
Ile Asp Thr Leu Gly Val Gly Gly Phe Gly Arg Val Glu Leu Val Gln
625                      630                      635                      640
ttg aaa agt gaa gaa tcc aaa acg ttt gca atg aag att ctc aag aaa    1968
Leu Lys Ser Glu Glu Ser Lys Thr Phe Ala Met Lys Ile Leu Lys Lys
                645                      650                      655
cgt cac att gtg gac aca aga cag cag gag cac atc cgc tca gag aag    2016
Arg His Ile Val Asp Thr Arg Gln Gln Glu His Ile Arg Ser Glu Lys
                660                      665                      670
cag atc atg cag ggg gct cat tcc gat ttc ata gtg aga ctg tac aga    2064
Gln Ile Met Gln Gly Ala His Ser Asp Phe Ile Val Arg Leu Tyr Arg
                675                      680                      685
aca ttt aag gac agc aaa tat ttg tat atg ttg atg gaa gct tgt cta    2112
Thr Phe Lys Asp Ser Lys Tyr Leu Tyr Met Leu Met Glu Ala Cys Leu
                690                      695                      700
ggt gga gag ctc tgg acc att ctc agg gat aga ggt tcg ttt gaa gat    2160
Gly Gly Glu Leu Trp Thr Ile Leu Arg Asp Arg Gly Ser Phe Glu Asp
705                      710                      715                      720
tct aca acc aga ttt tac aca gca tgt gtg gta gaa gct ttt gcc tat    2208
Ser Thr Thr Arg Phe Tyr Thr Ala Cys Val Val Glu Ala Phe Ala Tyr
                725                      730                      735
ctg cat tcc aaa gga atc att tac agg gac ctc aag cca gaa aat ctc    2256
Leu His Ser Lys Gly Ile Ile Tyr Arg Asp Leu Lys Pro Glu Asn Leu
                740                      745                      750
atc cta gat cac cga ggt tat gcc aaa ctg gtt gat ttt ggc ttt gca    2304
Ile Leu Asp His Arg Gly Tyr Ala Lys Leu Val Asp Phe Gly Phe Ala
                755                      760                      765
aag aaa ata gga ttt gga aag aaa aca tgg act ttt tgt ggg act cca    2352
Lys Lys Ile Gly Phe Gly Lys Lys Thr Trp Thr Phe Cys Gly Thr Pro
                770                      775                      780
gag tat gta gcc cca gag atc atc ctg aac aaa ggc cat gac att tca    2400
Glu Tyr Val Ala Pro Glu Ile Ile Leu Asn Lys Gly His Asp Ile Ser
785                      790                      795                      800
gcc gac tac tgg tca ctg gga atc cta atg tat gaa ctc ctg act ggc    2448
Ala Asp Tyr Trp Ser Leu Gly Ile Leu Met Tyr Glu Leu Leu Thr Gly
                805                      810                      815
agc cca cct ttc tca ggc cca gat cct atg aaa acc tat aac atc ata    2496
Ser Pro Pro Phe Ser Gly Pro Asp Pro Met Lys Thr Tyr Asn Ile Ile
                820                      825                      830
ttg agg ggg att gac atg ata gaa ttt cca aag aag att gcc aaa aat    2544
Leu Arg Gly Ile Asp Met Ile Glu Phe Pro Lys Lys Ile Ala Lys Asn
                835                      840                      845
gct gct aat tta att aaa aaa cta tgc agg gac aat cca tca gaa aga    2592
Ala Ala Asn Leu Ile Lys Lys Leu Cys Arg Asp Asn Pro Ser Glu Arg
850                      855                      860
tta ggg aat ttg aaa aat gga gta aaa gac att caa aag cac aaa tgg    2640
Leu Gly Asn Leu Lys Asn Gly Val Lys Asp Ile Gln Lys His Lys Trp
865                      870                      875                      880
ttt gag ggc ttt aac tgg gaa ggc tta aga aaa ggt acc ttg aca cct    2688
Phe Glu Gly Phe Asn Trp Glu Gly Leu Arg Lys Gly Thr Leu Thr Pro
                885                      890                      895
cct ata ata cca agt gtt gca tca ccc aca gac aca agt aat ttt gac    2736
Pro Ile Ile Pro Ser Val Ala Ser Pro Thr Asp Thr Ser Asn Phe Asp
                900                      905                      910
agt ttc cct gag gac aac gat gaa cca cca cct gat gac aac tca gga    2784
Ser Phe Pro Glu Asp Asn Asp Glu Pro Pro Pro Asp Asp Asn Ser Gly
                915                      920                      925
tgg gat ata gac ttc taa                                             2802
Trp Asp Ile Asp Phe
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177

<210> 135

<211> 933

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-PKG fusion

<400> 135

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Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20                  25                  30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35                  40                  45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50                  55                  60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100                 105                 110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115                 120                 125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130                 135                 140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195                 200                 205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                 215                 220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
Gly Leu Arg Ser Arg Gly Ser Met Gly Thr Leu Arg Asp Leu Gln Tyr
                245                 250                 255
Ala Leu Gln Glu Lys Ile Glu Glu Leu Arg Gln Arg Asp Ala Leu Ile
            260                 265                 270
Asp Glu Leu Glu Leu Glu Leu Asp Gln Lys Asp Glu Leu Ile Gln Lys
        275                 280                 285
Leu Gln Asn Glu Leu Asp Lys Tyr Arg Ser Val Ile Arg Pro Ala Thr
    290                 295                 300
Gln Gln Ala Gln Lys Gln Ser Ala Ser Thr Leu Gln Gly Glu Pro Arg
305                 310                 315                 320
Thr Lys Arg Gln Ala Ile Ser Ala Glu Pro Thr Ala Phe Asp Ile Gln
                325                 330                 335
Asp Leu Ser His Val Thr Leu Pro Phe Tyr Pro Lys Ser Pro Gln Ser
            340                 345                 350
Lys Asp Leu Ile Lys Glu Ala Ile Leu Asp Asn Asp Phe Met Lys Asn
```

```
              355                     360                     365
Leu Glu Leu Ser Gln Ile Gln Glu Ile Val Asp Cys Met Tyr Pro Val
    370                     375                     380
Glu Tyr Gly Lys Asp Ser Cys Ile Ile Lys Glu Gly Asp Val Gly Ser
385                     390                     395                     400
Leu Val Tyr Val Met Glu Asp Gly Lys Val Glu Val Thr Lys Glu Gly
                405                     410                     415
Val Lys Leu Cys Thr Met Gly Pro Gly Lys Val Phe Gly Glu Leu Ala
            420                     425                     430
Ile Leu Tyr Asn Cys Thr Arg Thr Ala Thr Val Lys Thr Leu Val Asn
            435                     440                     445
Val Lys Leu Trp Ala Ile Asp Arg Gln Cys Phe Gln Thr Ile Met Met
    450                     455                     460
Arg Thr Gly Leu Ile Lys His Thr Glu Tyr Met Glu Phe Leu Lys Ser
465                     470                     475                     480
Val Pro Thr Phe Gln Ser Leu Pro Glu Glu Ile Leu Ser Lys Leu Ala
                485                     490                     495
Asp Val Leu Glu Glu Thr His Tyr Glu Asn Gly Glu Tyr Ile Ile Arg
            500                     505                     510
Gln Gly Ala Arg Gly Asp Thr Phe Phe Ile Ile Ser Lys Gly Thr Val
            515                     520                     525
Asn Val Thr Arg Glu Asp Ser Pro Ser Glu Asp Pro Val Phe Leu Arg
    530                     535                     540
Thr Leu Gly Lys Gly Asp Trp Phe Gly Glu Lys Ala Leu Gln Gly Glu
545  .                    550                     555                     560
Asp Val Arg Thr Ala Asn Val Ile Ala Ala Glu Ala Val Thr Cys Leu
            565                     570                     575
Val Ile Asp Arg Asp Ser Phe Lys His Leu Ile Gly Gly Leu Asp Asp
            580                     585                     590
Val Ser Asn Lys Ala Tyr Glu Asp Ala Glu Ala Lys Ala Lys Tyr Glu
    595                     600                     605
Ala Glu Ala Ala Phe Phe Ala Asn Leu Lys Leu Ser Asp Phe Asn Ile
    610                     615                     620
Ile Asp Thr Leu Gly Val Gly Gly Phe Gly Arg Val Glu Leu Val Gln
625                     630                     635                     640
Leu Lys Ser Glu Glu Ser Lys Thr Phe Ala Met Lys Ile Leu Lys Lys
            645                     650                     655
Arg His Ile Val Asp Thr Arg Gln Gln Glu His Ile Arg Ser Glu Lys
            660                     665                     670
Gln Ile Met Gln Gly Ala His Ser Asp Phe Ile Val Arg Leu Tyr Arg
    675                     680                     685
Thr Phe Lys Asp Ser Lys Tyr Leu Tyr Met Leu Met Glu Ala Cys Leu
    690                     695                     700
Gly Gly Glu Leu Trp Thr Ile Leu Arg Asp Arg Gly Ser Phe Glu Asp
705                     710                     715                     720
Ser Thr Thr Arg Phe Tyr Thr Ala Cys Val Val Glu Ala Phe Ala Tyr
            725                     730                     735
Leu His Ser Lys Gly Ile Ile Tyr Arg Asp Leu Lys Pro Glu Asn Leu
            740                     745                     750
Ile Leu Asp His Arg Gly Tyr Ala Lys Leu Val Asp Phe Gly Phe Ala
    755                     760                     765
Lys Lys Ile Gly Phe Gly Lys Lys Thr Trp Thr Phe Cys Gly Thr Pro
    770                     775                     780
Glu Tyr Val Ala Pro Glu Ile Ile Leu Asn Lys Gly His Asp Ile Ser
785                     790                     795                     800
Ala Asp Tyr Trp Ser Leu Gly Ile Leu Met Tyr Glu Leu Leu Thr Gly
            805                     810                     815
Ser Pro Pro Phe Ser Gly Pro Asp Pro Met Lys Thr Tyr Asn Ile Ile
            820                     825                     830
Leu Arg Gly Ile Asp Met Ile Glu Phe Pro Lys Lys Ile Ala Lys Asn
    835                     840                     845
Ala Ala Asn Leu Ile Lys Lys Leu Cys Arg Asp Asn Pro Ser Glu Arg
    850                     855                     860
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179

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Leu Gly Asn Leu Lys Asn Gly Val Lys Asp Ile Gln Lys His Lys Trp
865                 870                 875                 880
Phe Glu Gly Phe Asn Trp Glu Gly Leu Arg Lys Gly Thr Leu Thr Pro
                885                 890                 895
Pro Ile Ile Pro Ser Val Ala Ser Pro Thr Asp Thr Ser Asn Phe Asp
            900                 905                 910
Ser Phe Pro Glu Asp Asn Asp Glu Pro Pro Pro Asp Asp Asn Ser Gly
        915                 920                 925
Trp Asp Ile Asp Phe
    930
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<210> 136

<211> 2799

<212> DNA

<213> Artificial Sequence

<220>

<223> PKG-EGFP fusion

<220>

<221> CDS

<222> (1)..(2796)

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atg ggc acc ttg cgg gat tta cag tac gcg ctc cag gag aag atc gag      48
Met Gly Thr Leu Arg Asp Leu Gln Tyr Ala Leu Gln Glu Lys Ile Glu
1               5                   10                  15
gag ctg agg cag cgg gat gct ctc atc gac gag ctg gag ctg gag ttg      96
Glu Leu Arg Gln Arg Asp Ala Leu Ile Asp Glu Leu Glu Leu Glu Leu
                20                  25                  30
gat cag aag gac gaa ctg atc cag aag ctg cag aac gag ctg gac aag     144
Asp Gln Lys Asp Glu Leu Ile Gln Lys Leu Gln Asn Glu Leu Asp Lys
            35                  40                  45
tac cgc tcg gtg atc cga cca gcc acc cag cag gcg cag aag cag agc     192
Tyr Arg Ser Val Ile Arg Pro Ala Thr Gln Gln Ala Gln Lys Gln Ser
        50                  55                  60
gcg agc acc ttg cag ggc gag ccg cgc acc aag cgg cag gcg atc tcc     240
Ala Ser Thr Leu Gln Gly Glu Pro Arg Thr Lys Arg Gln Ala Ile Ser
65                  70                  75                  80
gcc gag ccc acc gcc ttc gac atc cag gat ctc agc cat gtg acc ctg     288
Ala Glu Pro Thr Ala Phe Asp Ile Gln Asp Leu Ser His Val Thr Leu
                85                  90                  95
ccc ttc tac ccc aag agc cca cag tcc aag gat ctt ata aag gaa gct     336
Pro Phe Tyr Pro Lys Ser Pro Gln Ser Lys Asp Leu Ile Lys Glu Ala
            100                 105                 110
atc ctt gac aat gac ttt atg aag aac ttg gag ctg tcg cag atc cag     384
Ile Leu Asp Asn Asp Phe Met Lys Asn Leu Glu Leu Ser Gln Ile Gln
            115                 120                 125
gag att gtg gat tgt atg tac ccg gtg gag tat ggc aag gac agt tgc     432
Glu Ile Val Asp Cys Met Tyr Pro Val Glu Tyr Gly Lys Asp Ser Cys
        130                 135                 140
atc atc aaa gaa gga gac gtg ggg tca ctg gtg tat gtc atg gaa gat     480
```

180

```
Ile Ile Lys Glu Gly Asp Val Gly Ser Leu Val Tyr Val Met Glu Asp
145                 150                 155                 160
ggt aag gtt gaa gtt aca aaa gaa ggt gtg aag ttg tgt acc atg ggt    528
Gly Lys Val Glu Val Thr Lys Glu Gly Val Lys Leu Cys Thr Met Gly
                165                 170                 175
cca gga aaa gtg ttt ggg gaa ttg gct att ctt tac aac tgt acc cgg    576
Pro Gly Lys Val Phe Gly Glu Leu Ala Ile Leu Tyr Asn Cys Thr Arg
                180                 185                 190
aca gcg acc gtc aag act ctt gta aat gta aaa ctc tgg gcc att gat    624
Thr Ala Thr Val Lys Thr Leu Val Asn Val Lys Leu Trp Ala Ile Asp
                195                 200                 205
cga caa tgt ttt caa aca ata atg atg agg aca gga ctc atc aag cat    672
Arg Gln Cys Phe Gln Thr Ile Met Met Arg Thr Gly Leu Ile Lys His
    210                 215                 220
acc gag tat atg gaa ttt tta aaa agc gtt cca aca ttc cag agc ctt    720
Thr Glu Tyr Met Glu Phe Leu Lys Ser Val Pro Thr Phe Gln Ser Leu
225                 230                 235                 240
cct gaa gag atc ctc agc aag ctt gct gat gtc ctt gaa gag acc cac    768
Pro Glu Glu Ile Leu Ser Lys Leu Ala Asp Val Leu Glu Glu Thr His
                245                 250                 255
tat gaa aat gga gaa tat att atc agg caa ggt gca aga ggg gac acc    816
Tyr Glu Asn Gly Glu Tyr Ile Ile Arg Gln Gly Ala Arg Gly Asp Thr
                260                 265                 270
ttc ttt atc atc agc aaa gga acg gta aat gtc act cgt gaa gac tca    864
Phe Phe Ile Ile Ser Lys Gly Thr Val Asn Val Thr Arg Glu Asp Ser
                275                 280                 285
ccg agt gaa gac cca gtc ttt ctt aga act tta gga aaa gga gac tgg    912
Pro Ser Glu Asp Pro Val Phe Leu Arg Thr Leu Gly Lys Gly Asp Trp
    290                 295                 300
ttt gga gag aaa gcc ttg cag ggg gaa gat gtg aga aca gca aac gta    960
Phe Gly Glu Lys Ala Leu Gln Gly Glu Asp Val Arg Thr Ala Asn Val
305                 310                 315                 320
att gct gca gaa gct gta acc tgc ctt gtg att gac aga gac tct ttt   1008
Ile Ala Ala Glu Ala Val Thr Cys Leu Val Ile Asp Arg Asp Ser Phe
                325                 330                 335
aaa cat ttg att gga ggg ctg gat gat gtt tct aat aaa gca tat gaa   1056
Lys His Leu Ile Gly Gly Leu Asp Asp Val Ser Asn Lys Ala Tyr Glu
                340                 345                 350
gat gca gaa gct aaa gca aaa tat gaa gct gaa gcg gct ttc ttc gcc   1104
Asp Ala Glu Ala Lys Ala Lys Tyr Glu Ala Glu Ala Ala Phe Phe Ala
                355                 360                 365
aac ctg aag ctg tct gat ttc aac atc att gat acc ctt gga gtt gga   1152
Asn Leu Lys Leu Ser Asp Phe Asn Ile Ile Asp Thr Leu Gly Val Gly
    370                 375                 380
ggt ttc gga cga gta gaa ctg gtc cag ttg aaa agt gaa gaa tcc aaa   1200
Gly Phe Gly Arg Val Glu Leu Val Gln Leu Lys Ser Glu Glu Ser Lys
385                 390                 395                 400
acg ttt gca atg aag att ctc aag aaa cgt cac att gtg gac aca aga   1248
Thr Phe Ala Met Lys Ile Leu Lys Lys Arg His Ile Val Asp Thr Arg
                405                 410                 415
cag cag gag cac atc cgc tca gag aag cag atc atg cag ggg gct cat   1296
Gln Gln Glu His Ile Arg Ser Glu Lys Gln Ile Met Gln Gly Ala His
                420                 425                 430
tcc gat ttc ata gtg aga ctg tac aga aca ttt aag gac agc aaa tat   1344
Ser Asp Phe Ile Val Arg Leu Tyr Arg Thr Phe Lys Asp Ser Lys Tyr
                435                 440                 445
ttg tat atg ttg atg gaa gct tgt cta ggt gga gag ctc tgg acc att   1392
Leu Tyr Met Leu Met Glu Ala Cys Leu Gly Gly Glu Leu Trp Thr Ile
    450                 455                 460
ctc agg gat aga ggt tcg ttt gaa gat tct aca acc aga ttt tac aca   1440
Leu Arg Asp Arg Gly Ser Phe Glu Asp Ser Thr Thr Arg Phe Tyr Thr
465                 470                 475                 480
gca tgt gtg gta gaa gct ttt gcc tat ctg cat tcc aaa gga atc att   1488
```

```
Ala Cys Val Val Glu Ala Phe Ala Tyr Leu His Ser Lys Gly Ile Ile
            485                 490                 495
tac agg gac ctc aag cca gaa aat ctc atc cta gat cac cga ggt tat   1536
Tyr Arg Asp Leu Lys Pro Glu Asn Leu Ile Leu Asp His Arg Gly Tyr
            500                 505                 510
gcc aaa ctg gtt gat ttt ggc ttt gca aag aaa ata gga ttt gga aag   1584
Ala Lys Leu Val Asp Phe Gly Phe Ala Lys Lys Ile Gly Phe Gly Lys
            515                 520                 525
aaa aca tgg act ttt tgt ggg act cca gag tat gta gcc cca gag atc   1632
Lys Thr Trp Thr Phe Cys Gly Thr Pro Glu Tyr Val Ala Pro Glu Ile
            530                 535                 540
atc ctg aac aaa ggc cat gac att tca gcc gac tac tgg tca ctg gga   1680
Ile Leu Asn Lys Gly His Asp Ile Ser Ala Asp Tyr Trp Ser Leu Gly
545                 550                 555                 560
atc cta atg tat gaa ctc ctg act ggc agc cca cct ttc tca ggc cca   1728
Ile Leu Met Tyr Glu Leu Leu Thr Gly Ser Pro Pro Phe Ser Gly Pro
            565                 570                 575
gat cct atg aaa acc tat aac atc ata ttg agg ggg att gac atg ata   1776
Asp Pro Met Lys Thr Tyr Asn Ile Ile Leu Arg Gly Ile Asp Met Ile
            580                 585                 590
gaa ttt cca aag aag att gcc aaa aat gct gct aat tta att aaa aaa   1824
Glu Phe Pro Lys Lys Ile Ala Lys Asn Ala Ala Asn Leu Ile Lys Lys
            595                 600                 605
cta tgc agg gac aat cca tca gaa aga tta ggg aat ttg aaa aat gga   1872
Leu Cys Arg Asp Asn Pro Ser Glu Arg Leu Gly Asn Leu Lys Asn Gly
            610                 615                 620
gta aaa gac att caa aag cac aaa tgg ttt gag ggc ttt aac tgg gaa   1920
Val Lys Asp Ile Gln Lys His Lys Trp Phe Glu Gly Phe Asn Trp Glu
625                 630                 635                 640
ggc tta aga aaa ggt acc ttg aca cct cct ata ata cca agt gtt gca   1968
Gly Leu Arg Lys Gly Thr Leu Thr Pro Pro Ile Ile Pro Ser Val Ala
            645                 650                 655
tca ccc aca gac aca agt aat ttt gac agt ttc cct gag gac aac gat   2016
Ser Pro Thr Asp Thr Ser Asn Phe Asp Ser Phe Pro Glu Asp Asn Asp
            660                 665                 670
gaa cca cca cct gat gac aac tca gga tgg gat ata gac ttc tcg gat   2064
Glu Pro Pro Pro Asp Asp Asn Ser Gly Trp Asp Ile Asp Phe Ser Asp
            675                 680                 685
cca ccg gtc gcc acc atg gtg agc aag ggc gag gag ctg ttc acc ggg   2112
Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly
            690                 695                 700
gtg gtg ccc atc ctg gtc gag ctg gac ggc gac gta aac ggc cac aag   2160
Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys
705                 710                 715                 720
ttc agc gtg tcc ggc gag ggc gag ggc gat gcc acc tac ggc aag ctg   2208
Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu
            725                 730                 735
acc ctg aag ttc atc tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc   2256
Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro
            740                 745                 750
acc ctc gtg acc acc ctg acc tac ggc gtg cag tgc ttc agc cgc tac   2304
Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr
            755                 760                 765
ccc gac cac atg aag cag cac gac ttc ttc aag tcc gcc atg ccc gaa   2352
Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu
            770                 775                 780
ggc tac gtc cag gag cgc acc atc ttc ttc aag gac gac ggc aac tac   2400
Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr
785                 790                 795                 800
aag acc cgc gcc gag gtg aag ttc gag ggc gac acc ctg gtg aac cgc   2448
Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg
            805                 810                 815
atc gag ctg aag ggc atc gac ttc aag gag gac ggc aac atc ctg ggg   2496
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182

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Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly
            820                 825                 830
cac aag ctg gag tac aac tac aac agc cac aac gtc tat atc atg gcc      2544
His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala
            835                 840                 845
gac aag cag aag aac ggc atc aag gtg aac ttc aag atc cgc cac aac      2592
Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn
        850                 855                 860
atc gag gac ggc agc gtg cag ctc gcc gac cac tac cag cag aac acc      2640
Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr
865                 870                 875                 880
ccc atc ggc gac ggc ccc gtg ctg ctg ccc gac aac cac tac ctg agc      2688
Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser
                885                 890                 895
acc cag tcc gcc ctg agc aaa gac ccc aac gag aag cgc gat cac atg      2736
Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met
            900                 905                 910
gtc ctg ctg gag ttc gtg acc gcc gcc ggg atc act ctc ggc atg gac      2784
Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp
            915                 920                 925
gag ctg tac aag taa                                                   2799
Glu Leu Tyr Lys
        930


<210>  137

<211>  932

<212>  PRT

<213>  Artificial Sequence


<220>

<223>  PKG-EGFP fusion


<400>  137
Met Gly Thr Leu Arg Asp Leu Gln Tyr Ala Leu Gln Glu Lys Ile Glu
1               5                   10                  15
Glu Leu Arg Gln Arg Asp Ala Leu Ile Asp Glu Leu Glu Leu Glu Leu
            20                  25                  30
Asp Gln Lys Asp Glu Leu Ile Gln Lys Leu Gln Asn Glu Leu Asp Lys
        35                  40                  45
Tyr Arg Ser Val Ile Arg Pro Ala Thr Gln Gln Ala Gln Lys Gln Ser
    50                  55                  60
Ala Ser Thr Leu Gln Gly Glu Pro Arg Thr Lys Arg Gln Ala Ile Ser
65                  70                  75                  80
Ala Glu Pro Thr Ala Phe Asp Ile Gln Asp Leu Ser His Val Thr Leu
                85                  90                  95
Pro Phe Tyr Pro Lys Ser Pro Gln Ser Lys Asp Leu Ile Lys Glu Ala
            100                 105                 110
Ile Leu Asp Asn Asp Phe Met Lys Asn Leu Glu Leu Ser Gln Ile Gln
        115                 120                 125
Glu Ile Val Asp Cys Met Tyr Pro Val Glu Tyr Gly Lys Asp Ser Cys
    130                 135                 140
Ile Ile Lys Glu Gly Asp Val Gly Ser Leu Val Tyr Val Met Glu Asp
145                 150                 155                 160
Gly Lys Val Glu Val Thr Lys Glu Gly Val Lys Leu Cys Thr Met Gly
                165                 170                 175
Pro Gly Lys Val Phe Gly Glu Leu Ala Ile Leu Tyr Asn Cys Thr Arg
```

183

```
                     180                      185                      190
Thr Ala Thr Val Lys Thr Leu Val Asn Val Lys Leu Trp Ala Ile Asp
         195                      200                      205
Arg Gln Cys Phe Gln Thr Ile Met Met Arg Thr Gly Leu Ile Lys His
         210                      215                      220
Thr Glu Tyr Met Glu Phe Leu Lys Ser Val Pro Thr Phe Gln Ser Leu
225                      230                      235                      240
Pro Glu Glu Ile Leu Ser Lys Leu Ala Asp Val Leu Glu Glu Thr His
                   245                      250                      255
Tyr Glu Asn Gly Glu Tyr Ile Ile Arg Gln Gly Ala Arg Gly Asp Thr
                   260                      265                      270
Phe Phe Ile Ile Ser Lys Gly Thr Val Asn Val Thr Arg Glu Asp Ser
         275                      280                      285
Pro Ser Glu Asp Pro Val Phe Leu Arg Thr Leu Gly Lys Gly Asp Trp
         290                      295                      300
Phe Gly Glu Lys Ala Leu Gln Gly Glu Asp Val Arg Thr Ala Asn Val
305                      310                      315                      320
Ile Ala Ala Glu Ala Val Thr Cys Leu Val Ile Asp Arg Asp Ser Phe
                   325                      330                      335
Lys His Leu Ile Gly Gly Leu Asp Asp Val Ser Asn Lys Ala Tyr Glu
                   340                      345                      350
Asp Ala Glu Ala Lys Ala Lys Tyr Glu Ala Glu Ala Ala Phe Phe Ala
         355                      360                      365
Asn Leu Lys Leu Ser Asp Phe Asn Ile Ile Asp Thr Leu Gly Val Gly
         370                      375                      380
Gly Phe Gly Arg Val Glu Leu Val Gln Leu Lys Ser Glu Glu Ser Lys
385                      390                      395                      400
Thr Phe Ala Met Lys Ile Leu Lys Lys Arg His Ile Val Asp Thr Arg
                   405                      410                      415
Gln Gln Glu His Ile Arg Ser Glu Lys Gln Ile Met Gln Gly Ala His
                   420                      425                      430
Ser Asp Phe Ile Val Arg Leu Tyr Arg Thr Phe Lys Asp Ser Lys Tyr
         435                      440                      445
Leu Tyr Met Leu Met Glu Ala Cys Leu Gly Gly Glu Leu Trp Thr Ile
         450                      455                      460
Leu Arg Asp Arg Gly Ser Phe Glu Asp Ser Thr Thr Arg Phe Tyr Thr
465                      470                      475                      480
Ala Cys Val Val Glu Ala Phe Ala Tyr Leu His Ser Lys Gly Ile Ile
                   485                      490                      495
Tyr Arg Asp Leu Lys Pro Glu Asn Leu Ile Leu Asp His Arg Gly Tyr
                   500                      505                      510
Ala Lys Leu Val Asp Phe Gly Phe Ala Lys Lys Ile Gly Phe Gly Lys
         515                      520                      525
Lys Thr Trp Thr Phe Cys Gly Thr Pro Glu Tyr Val Ala Pro Glu Ile
         530                      535                      540
Ile Leu Asn Lys Gly His Asp Ile Ser Ala Asp Tyr Trp Ser Leu Gly
545                      550                      555                      560
Ile Leu Met Tyr Glu Leu Leu Thr Gly Ser Pro Pro Phe Ser Gly Pro
                   565                      570                      575
Asp Pro Met Lys Thr Tyr Asn Ile Ile Leu Arg Gly Ile Asp Met Ile
                   580                      585                      590
Glu Phe Pro Lys Lys Ile Ala Lys Asn Ala Ala Asn Leu Ile Lys Lys
         595                      600                      605
Leu Cys Arg Asp Asn Pro Ser Glu Arg Leu Gly Asn Leu Lys Asn Gly
         610                      615                      620
Val Lys Asp Ile Gln Lys His Lys Trp Phe Glu Gly Phe Asn Trp Glu
625                      630                      635                      640
Gly Leu Arg Lys Gly Thr Leu Thr Pro Pro Ile Ile Pro Ser Val Ala
                   645                      650                      655
Ser Pro Thr Asp Thr Ser Asn Phe Asp Ser Phe Pro Glu Asp Asn Asp
                   660                      665                      670
Glu Pro Pro Pro Asp Asp Asn Ser Gly Trp Asp Ile Asp Phe Ser Asp
                   675                      680                      685


                              184
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```
Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly
    690                 695             700
Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys
705             710             715                     720
Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu
            725             730                     735
Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro
            740             745             750
Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr
        755             760             765
Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu
    770             775             780
Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr
785             790             795             800
Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg
            805             810             815
Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly
        820             825             830
His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala
    835             840             845
Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn
    850             855             860
Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr
865             870             875                     880
Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser
            885             890             895
Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met
        900             905             910
Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp
        915             920             925
Glu Leu Tyr Lys
    930
```


<210> 138

<211> 2184

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-PKB fusion

<220>

<221> CDS

<222> (1)..(2181)


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<400> 138
atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg      48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc      96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20                  25                  30
```

```
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc    144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35                  40                  45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc    192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50                  55                  60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag    240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag    288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag    336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                100                 105                 110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc    384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115                 120                 125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac    432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
        130                 135                 140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac    480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc    528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc    576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
        180                 185                 190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg    624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195                 200                 205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc    672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
        210                 215                 220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc    720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
gga ctc aga tct cga ggc acc atg agc gac gtg gct att gtg aag gag    768
Gly Leu Arg Ser Arg Gly Thr Met Ser Asp Val Ala Ile Val Lys Glu
                245                 250                 255
ggt tgg ctg cac aaa cga ggg gag tac atc aag acc tgg cgg cca cgc    816
Gly Trp Leu His Lys Arg Gly Glu Tyr Ile Lys Thr Trp Arg Pro Arg
                260                 265                 270
tac ttc ctc ctc aag aat gat ggc acc ttc att ggc tac aag gag cgg    864
Tyr Phe Leu Leu Lys Asn Asp Gly Thr Phe Ile Gly Tyr Lys Glu Arg
        275                 280                 285
ccg cag gat gtg gac caa cgt gag gct ccc ctc aac aac ttc tct gtg    912
Pro Gln Asp Val Asp Gln Arg Glu Ala Pro Leu Asn Asn Phe Ser Val
        290                 295                 300
gcg cag tgc cag ctg atg aag acg gag cgg ccc cgg ccc aac acc ttc    960
Ala Gln Cys Gln Leu Met Lys Thr Glu Arg Pro Arg Pro Asn Thr Phe
305                 310                 315                 320
atc atc cgc tgc ctg cag tgg acc act gtc atc gaa cgc acc ttc cat   1008
Ile Ile Arg Cys Leu Gln Trp Thr Thr Val Ile Glu Arg Thr Phe His
                325                 330                 335
gtg gag act cct gag gag cgg gag gag tgg aca acc gcc atc cag act   1056
Val Glu Thr Pro Glu Glu Arg Glu Glu Trp Thr Thr Ala Ile Gln Thr
        340                 345                 350
gtg gct gac ggc ctc aag aag cag gag gag gag gag atg gac ttc cgg   1104
Val Ala Asp Gly Leu Lys Lys Gln Glu Glu Glu Glu Met Asp Phe Arg
        355                 360                 365
```

186

```
tcg ggc tca ccc agt gac aac tca ggg gct gaa gag atg gag gtg tcc    1152
Ser Gly Ser Pro Ser Asp Asn Ser Gly Ala Glu Glu Met Glu Val Ser
    370             375                 380
ctg gcc aag ccc aag cac cgc gtg acc atg aac gag ttt gag tac ctg    1200
Leu Ala Lys Pro Lys His Arg Val Thr Met Asn Glu Phe Glu Tyr Leu
385                 390                 395                 400
aag ctg ctg ggc aag ggc act ttc ggc aag gtg atc ctg gtg aag gag    1248
Lys Leu Leu Gly Lys Gly Thr Phe Gly Lys Val Ile Leu Val Lys Glu
                405                 410                 415
aag gcc aca ggc cgc tac tac gcc atg aag atc ctc aag aag gaa gtc    1296
Lys Ala Thr Gly Arg Tyr Tyr Ala Met Lys Ile Leu Lys Lys Glu Val
                420                 425                 430
atc gtg gcc aag gac gag gtg gcc cac aca ctc acc gag aac cgc gtc    1344
Ile Val Ala Lys Asp Glu Val Ala His Thr Leu Thr Glu Asn Arg Val
                435                 440                 445
ctg cag aac tcc agg cac ccc ttc ctc aca gcc ctg aag tac tct ttc    1392
Leu Gln Asn Ser Arg His Pro Phe Leu Thr Ala Leu Lys Tyr Ser Phe
    450                 455                 460
cag acc cac gac cgc ctc tgc ttt gtc atg gag tac gcc aac ggg ggc    1440
Gln Thr His Asp Arg Leu Cys Phe Val Met Glu Tyr Ala Asn Gly Gly
465                 470                 475                 480
gag ctg ttc ttc cac ctg tcc cgg gaa cgt gtg ttc tcc gag gac cgg    1488
Glu Leu Phe Phe His Leu Ser Arg Glu Arg Val Phe Ser Glu Asp Arg
                485                 490                 495
gcc cgc ttc tat ggc gct gag att gtg tca gcc ctg gac tac ctg cac    1536
Ala Arg Phe Tyr Gly Ala Glu Ile Val Ser Ala Leu Asp Tyr Leu His
                500                 505                 510
tcg gag aag aac gtg gtg tac cgg gac ctc aag ctg gag aac ctc atg    1584
Ser Glu Lys Asn Val Val Tyr Arg Asp Leu Lys Leu Glu Asn Leu Met
                515                 520                 525
ctg gac aag gac ggg cac att aag atc aca gac ttc ggg ctg tgc aag    1632
Leu Asp Lys Asp Gly His Ile Lys Ile Thr Asp Phe Gly Leu Cys Lys
    530                 535                 540
gag ggg atc aag gac ggt gcc acc atg aag acc ttt tgc ggc aca cct    1680
Glu Gly Ile Lys Asp Gly Ala Thr Met Lys Thr Phe Cys Gly Thr Pro
545                 550                 555                 560
gag tac ctg gcc ccc gag gtg ctg gag gac aat gac tac ggc cgt gca    1728
Glu Tyr Leu Ala Pro Glu Val Leu Glu Asp Asn Asp Tyr Gly Arg Ala
                565                 570                 575
gtg gac tgg tgg ggg ctg ggc gtg gtc atg tac gag atg atg tgc ggt    1776
Val Asp Trp Trp Gly Leu Gly Val Val Met Tyr Glu Met Met Cys Gly
                580                 585                 590
cgc ctg ccc ttc tac aac cag gac cat gag aag ctt ttt gag ctc atc    1824
Arg Leu Pro Phe Tyr Asn Gln Asp His Glu Lys Leu Phe Glu Leu Ile
                595                 600                 605
ctc atg gag gag atc cgc ttc ccg cgc acg ctt ggt ccc gag gcc aag    1872
Leu Met Glu Glu Ile Arg Phe Pro Arg Thr Leu Gly Pro Glu Ala Lys
    610                 615                 620
tcc ttg ctt tca ggg ctg ctc aag aag gac ccc aag cag agg ctt ggc    1920
Ser Leu Leu Ser Gly Leu Leu Lys Lys Asp Pro Lys Gln Arg Leu Gly
625                 630                 635                 640
ggg ggc tcc gag gac gcc aag gag atc atg cag cat cgc ttc ttt gcc    1968
Gly Gly Ser Glu Asp Ala Lys Glu Ile Met Gln His Arg Phe Phe Ala
                645                 650                 655
ggt atc gtg tgg cag cac gtg tac gag aag aag ctc agc cca ccc ttc    2016
Gly Ile Val Trp Gln His Val Tyr Glu Lys Lys Leu Ser Pro Pro Phe
                660                 665                 670
aag ccc cag gtc acg tcg gag act gac acc agg tat ttt gat gag gag    2064
Lys Pro Gln Val Thr Ser Glu Thr Asp Thr Arg Tyr Phe Asp Glu Glu
    675                 680                 685
ttc acg gcc cag atg atc acc atc aca cca cct gac caa gat gac agc    2112
Phe Thr Ala Gln Met Ile Thr Ile Thr Pro Pro Asp Gln Asp Asp Ser
    690                 695                 700
```

187

```
atg gag tgt gtg gac agc gag cgc agg ccc cac ttc ccc cag ttc tcc      2160
Met Glu Cys Val Asp Ser Glu Arg Arg Pro His Phe Pro Gln Phe Ser
705                     710                 715                 720
tac tcg gcc agc agc acg gcc tga                                      2184
Tyr Ser Ala Ser Ser Thr Ala
                725
```

<210> 139

<211> 727

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-PKB fusion

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<400> 139
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20                  25                  30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
        35                  40                  45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
    50                  55                  60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100                 105                 110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115                 120                 125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130                 135                 140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195                 200                 205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                 215                 220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
Gly Leu Arg Ser Arg Gly Thr Met Ser Asp Val Ala Ile Val Lys Glu
                245                 250                 255
Gly Trp Leu His Lys Arg Gly Glu Tyr Ile Lys Thr Trp Arg Pro Arg
            260                 265                 270
Tyr Phe Leu Leu Lys Asn Asp Gly Thr Phe Ile Gly Tyr Lys Glu Arg
        275                 280                 285
Pro Gln Asp Val Asp Gln Arg Glu Ala Pro Leu Asn Asn Phe Ser Val
    290                 295                 300
Ala Gln Cys Gln Leu Met Lys Thr Glu Arg Pro Arg Pro Asn Thr Phe
305                 310                 315                 320
```

188

```
Ile Ile Arg Cys Leu Gln Trp Thr Thr Val Ile Glu Arg Thr Phe His
            325                 330                 335
Val Glu Thr Pro Glu Glu Arg Glu Glu Glu Glu Met Asp Phe Arg
            340                 345                 350
Val Ala Asp Gly Leu Lys Lys Gln Glu Glu Glu Glu Met Asp Phe Arg
            355                 360                 365
Ser Gly Ser Pro Ser Asp Asn Ser Gly Ala Glu Glu Met Glu Val Ser
            370                 375                 380
Leu Ala Lys Pro Lys His Arg Val Thr Met Asn Glu Phe Glu Tyr Leu
385                 390                 395                 400
Lys Leu Leu Gly Lys Gly Thr Phe Gly Lys Val Ile Leu Val Lys Glu
                405                 410                 415
Lys Ala Thr Gly Arg Tyr Tyr Ala Met Lys Ile Leu Lys Lys Glu Val
                420                 425                 430
Ile Val Ala Lys Asp Glu Val Ala His Thr Leu Thr Glu Asn Arg Val
                435                 440                 445
Leu Gln Asn Ser Arg His Pro Phe Leu Thr Ala Leu Lys Tyr Ser Phe
            450                 455                 460
Gln Thr His Asp Arg Leu Cys Phe Val Met Glu Tyr Ala Asn Gly Gly
465                 470                 475                 480
Glu Leu Phe Phe His Leu Ser Arg Glu Arg Val Phe Ser Glu Asp Arg
                485                 490                 495
Ala Arg Phe Tyr Gly Ala Glu Ile Val Ser Ala Leu Asp Tyr Leu His
            500                 505                 510
Ser Glu Lys Asn Val Val Tyr Arg Asp Leu Lys Leu Glu Asn Leu Met
            515                 520                 525
Leu Asp Lys Asp Gly His Ile Lys Ile Thr Asp Phe Gly Leu Cys Lys
            530                 535                 540
Glu Gly Ile Lys Asp Gly Ala Thr Met Lys Thr Phe Cys Gly Thr Pro
545                 550                 555                 560
Glu Tyr Leu Ala Pro Glu Val Leu Glu Asp Asn Asp Tyr Gly Arg Ala
                565                 570                 575
Val Asp Trp Trp Gly Leu Gly Val Val Met Tyr Glu Met Met Cys Gly
                580                 585                 590
Arg Leu Pro Phe Tyr Asn Gln Asp His Glu Lys Leu Phe Glu Leu Ile
                595                 600                 605
Leu Met Glu Glu Ile Arg Phe Pro Arg Thr Leu Gly Pro Glu Ala Lys
            610                 615                 620
Ser Leu Leu Ser Gly Leu Leu Lys Lys Asp Pro Lys Gln Arg Leu Gly
625                 630                 635                 640
Gly Gly Ser Glu Asp Ala Lys Glu Ile Met Gln His Arg Phe Phe Ala
                645                 650                 655
Gly Ile Val Trp Gln His Val Tyr Glu Lys Lys Leu Ser Pro Pro Phe
            660                 665                 670
Lys Pro Gln Val Thr Ser Glu Thr Asp Thr Arg Tyr Phe Asp Glu Glu
            675                 680                 685
Phe Thr Ala Gln Met Ile Thr Ile Thr Pro Pro Asp Gln Asp Asp Ser
            690                 695                 700
Met Glu Cys Val Asp Ser Glu Arg Arg Pro His Phe Pro Gln Phe Ser
705                 710                 715                 720
Tyr Ser Ala Ser Ser Thr Ala
                725
```

<210> 140

<211> 2394

<212> DNA

<213> Artificial Sequence

<220>

<223>   NFkappaB-EGFP fusion

<220>

<221>   CDS

<222>   (1)..(2391)

<400>   140
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atg gac gaa ctg ttc ccc ctc atc ttc ccg gca gag cca gcc cag gcc        48
Met Asp Glu Leu Phe Pro Leu Ile Phe Pro Ala Glu Pro Ala Gln Ala
1               5                   10                  15
tct ggc ccc tat gtg gag atc att gag cag ccc aag cag cgg ggc atg        96
Ser Gly Pro Tyr Val Glu Ile Ile Glu Gln Pro Lys Gln Arg Gly Met
                20                  25                  30
cgc ttc cgc tac aag tgc gag ggg cgc tcc gcg ggc agc atc cca ggc       144
Arg Phe Arg Tyr Lys Cys Glu Gly Arg Ser Ala Gly Ser Ile Pro Gly
            35                  40                  45
gag agg agc aca gat acc acc aag acc cac ccc acc atc aag atc aat       192
Glu Arg Ser Thr Asp Thr Thr Lys Thr His Pro Thr Ile Lys Ile Asn
        50                  55                  60
ggc tac aca gga cca ggg aca gtg cgc atc tcc ctg gtc acc aag gac       240
Gly Tyr Thr Gly Pro Gly Thr Val Arg Ile Ser Leu Val Thr Lys Asp
65                  70                  75                  80
cct cct cac cgg cct cac ccc cac gag ctt gta gga aag gac tgc cgg       288
Pro Pro His Arg Pro His Pro His Glu Leu Val Gly Lys Asp Cys Arg
                85                  90                  95
gat ggc ttc tat gag gct gag ctc tgc ccg gac cgc tgc atc cac agt       336
Asp Gly Phe Tyr Glu Ala Glu Leu Cys Pro Asp Arg Cys Ile His Ser
            100                 105                 110
ttc cag aac ctg gga atc cag tgt gtg aag aag cgg gac ctg gag cag       384
Phe Gln Asn Leu Gly Ile Gln Cys Val Lys Lys Arg Asp Leu Glu Gln
            115                 120                 125
gct atc agt cag cgc atc cag acc aac aac aac ccc ttc caa gtt cct       432
Ala Ile Ser Gln Arg Ile Gln Thr Asn Asn Asn Pro Phe Gln Val Pro
        130                 135                 140
ata gaa gag cag cgt ggg gac tac gac ctg aat gct gtg cgg ctc tgc       480
Ile Glu Glu Gln Arg Gly Asp Tyr Asp Leu Asn Ala Val Arg Leu Cys
145                 150                 155                 160
ttc cag gtg aca gtg cgg gac cca tca ggc agg ccc ctc cgc ctg ccg       528
Phe Gln Val Thr Val Arg Asp Pro Ser Gly Arg Pro Leu Arg Leu Pro
                165                 170                 175
cct gtc ctt cct cat ccc atc ttt gac aat cgt gcc ccc aac act gcc       576
Pro Val Leu Pro His Pro Ile Phe Asp Asn Arg Ala Pro Asn Thr Ala
            180                 185                 190
gag ctc aag atc tgc cga gtg aac cga aac tct ggc agc tgc ctc ggt       624
Glu Leu Lys Ile Cys Arg Val Asn Arg Asn Ser Gly Ser Cys Leu Gly
            195                 200                 205
ggg gat gag atc ttc cta ctg tgt gac aag gtg cag aaa gag gac att       672
Gly Asp Glu Ile Phe Leu Leu Cys Asp Lys Val Gln Lys Glu Asp Ile
            210                 215                 220
gag gtg tat ttc acg gga cca ggc tgg gag gcc cga ggc tcc ttt tcg       720
Glu Val Tyr Phe Thr Gly Pro Gly Trp Glu Ala Arg Gly Ser Phe Ser
225                 230                 235                 240
caa gct gat gtg cac cga caa gtg gcc att gtg ttc cgg acc cct ccc       768
Gln Ala Asp Val His Arg Gln Val Ala Ile Val Phe Arg Thr Pro Pro
                245                 250                 255
```

```
tac gca gac ccc agc ctg cag gct cct gtg cgt gtc tcc atg cag ctg        816
Tyr Ala Asp Pro Ser Leu Gln Ala Pro Val Arg Val Ser Met Gln Leu
            260                 265                 270
cgg cgg cct tcc gac cgg gag ctc agt gag ccc atg gaa ttc cag tac        864
Arg Arg Pro Ser Asp Arg Glu Leu Ser Glu Pro Met Glu Phe Gln Tyr
            275                 280                 285
ctg cca gat aca gac gat cgt cac cgg att gag gag aaa cgt aaa agg        912
Leu Pro Asp Thr Asp Asp Arg His Arg Ile Glu Glu Lys Arg Lys Arg
            290                 295                 300
aca tat gag acc ttc aag agc atc atg aag aag agt cct ttc agc gga        960
Thr Tyr Glu Thr Phe Lys Ser Ile Met Lys Lys Ser Pro Phe Ser Gly
305                 310                 315                 320
ccc acc gac ccc cgg cct cca cct cga cgc att gct gtg cct tcc cgc       1008
Pro Thr Asp Pro Arg Pro Pro Pro Arg Arg Ile Ala Val Pro Ser Arg
                325                 330                 335
agc tca gct tct gtc ccc aag cca gca ccc cag ccc tat ccc ttt acg       1056
Ser Ser Ala Ser Val Pro Lys Pro Ala Pro Gln Pro Tyr Pro Phe Thr
                340                 345                 350
tca tcc ctg agc acc atc aac tat gat gag ttt ccc acc atg gtg ttt       1104
Ser Ser Leu Ser Thr Ile Asn Tyr Asp Glu Phe Pro Thr Met Val Phe
                355                 360                 365
cct tct ggg cag atc agc cag gcc tcg gcc ttg gcc ccg gcc cct ccc       1152
Pro Ser Gly Gln Ile Ser Gln Ala Ser Ala Leu Ala Pro Ala Pro Pro
            370                 375                 380
caa gtc ctg ccc cag gct cca gcc cct gcc cct gct cca gcc atg gta       1200
Gln Val Leu Pro Gln Ala Pro Ala Pro Ala Pro Ala Pro Ala Met Val
385                 390                 395                 400
tca gct ctg gcc cag gcc cca gcc cct gtc cca gtc cta gcc cca ggc       1248
Ser Ala Leu Ala Gln Ala Pro Ala Pro Val Pro Val Leu Ala Pro Gly
                405                 410                 415
cct cct cag gct gtg gcc cca cct gcc ccc aag ccc acc cag gct ggg       1296
Pro Pro Gln Ala Val Ala Pro Pro Ala Pro Lys Pro Thr Gln Ala Gly
                420                 425                 430
gaa gga acg ctg tca gag gcc ctg ctg cag ctg cag ttt gat gat gaa       1344
Glu Gly Thr Leu Ser Glu Ala Leu Leu Gln Leu Gln Phe Asp Asp Glu
                435                 440                 445
gac ctg ggg gcc ttg ctt ggc aac agc aca gac cca gct gtg ttc aca       1392
Asp Leu Gly Ala Leu Leu Gly Asn Ser Thr Asp Pro Ala Val Phe Thr
            450                 455                 460
gac ctg gca tcc gtc gac aac tcc gag ttt cag cag ctg ctg aac cag       1440
Asp Leu Ala Ser Val Asp Asn Ser Glu Phe Gln Gln Leu Leu Asn Gln
465                 470                 475                 480
ggc ata cct gtg gcc ccc cac aca act gag ccc atg ctg atg gag tac       1488
Gly Ile Pro Val Ala Pro His Thr Thr Glu Pro Met Leu Met Glu Tyr
                485                 490                 495
cct gag gct ata act cgc cta gtg aca ggg gcc cag agg ccc ccc gac       1536
Pro Glu Ala Ile Thr Arg Leu Val Thr Gly Ala Gln Arg Pro Pro Asp
                500                 505                 510
cca gct cct gct cca ctg ggg gcc ccg ggg ctc ccc aat ggc ctc ctt       1584
Pro Ala Pro Ala Pro Leu Gly Ala Pro Gly Leu Pro Asn Gly Leu Leu
            515                 520                 525
tca gga gat gaa gac ttc tcc tcc att gcg gac atg gac ttc tca gcc       1632
Ser Gly Asp Glu Asp Phe Ser Ser Ile Ala Asp Met Asp Phe Ser Ala
            530                 535                 540
ctg ctg agt cag atc agc tcc ttg gat cca ccg gtc gcc acc atg gtg       1680
Leu Leu Ser Gln Ile Ser Ser Leu Asp Pro Pro Val Ala Thr Met Val
545                 550                 555                 560
agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc gag       1728
Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu
                565                 570                 575
ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag ggc       1776
Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly
            580                 585                 590
```

191

```
gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc acc    1824
Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr
            595                 600                 605
acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg acc    1872
Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr
            610                 615                 620
tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag cac    1920
Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His
625                 630                 635                 640
gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc acc    1968
Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr
                645                 650                 655
atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag gtg aag    2016
Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys
                660                 665                 670
ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc atc gac    2064
Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp
            675                 680                 685
ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac aac tac    2112
Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr
            690                 695                 700
aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac ggc atc    2160
Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile
705                 710                 715                 720
aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc gtg cag    2208
Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln
                725                 730                 735
ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc ccc gtg    2256
Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val
            740                 745                 750
ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg agc aaa    2304
Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys
            755                 760                 765
gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc gtg acc    2352
Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr
            770                 775                 780
gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag taa            2394
Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
785                 790                 795
```

<210> 141

<211> 797

<212> PRT

<213> Artificial Sequence

<220>

<223> NFkappaB-EGFP fusion

```
<400> 141
Met Asp Glu Leu Phe Pro Leu Ile Phe Pro Ala Glu Pro Ala Gln Ala
1               5                   10                  15
Ser Gly Pro Tyr Val Glu Ile Ile Glu Gln Pro Lys Gln Arg Gly Met
                20                  25                  30
Arg Phe Arg Tyr Lys Cys Glu Gly Arg Ser Ala Gly Ser Ile Pro Gly
            35                  40                  45
Glu Arg Ser Thr Asp Thr Thr Lys Thr His Pro Thr Ile Lys Ile Asn
```

192

Gly Tyr Thr Gly Pro Gly Thr Val Arg Ile Ser Leu Val Thr Lys Asp
65   70   75   80
Pro Pro His Arg Pro His Pro His Glu Leu Val Gly Lys Asp Cys Arg
                    85   90   95
Asp Gly Phe Tyr Glu Ala Glu Leu Cys Pro Asp Arg Cys Ile His Ser
                100   105   110
Phe Gln Asn Leu Gly Ile Gln Cys Val Lys Lys Arg Asp Leu Glu Gln
        115   120   125
Ala Ile Ser Gln Arg Ile Gln Thr Asn Asn Pro Phe Gln Val Pro
        130   135   140
Ile Glu Glu Gln Arg Gly Asp Tyr Asp Leu Asn Ala Val Arg Leu Cys
145   150   155   160
Phe Gln Val Thr Val Arg Asp Pro Ser Gly Arg Pro Leu Arg Leu Pro
                165   170   175
Pro Val Leu Pro His Pro Ile Phe Asp Asn Arg Ala Pro Asn Thr Ala
                180   185   190
Glu Leu Lys Ile Cys Arg Val Asn Arg Asn Ser Gly Ser Cys Leu Gly
        195   200   205
Gly Asp Glu Ile Phe Leu Leu Cys Asp Lys Val Gln Lys Glu Asp Ile
210   215   220
Glu Val Tyr Phe Thr Gly Pro Gly Trp Glu Ala Arg Gly Ser Phe Ser
225   230   235   240
Gln Ala Asp Val His Arg Gln Val Ala Ile Val Phe Arg Thr Pro Pro
                245   250   255
Tyr Ala Asp Pro Ser Leu Gln Ala Pro Val Arg Val Ser Met Gln Leu
                260   265   270
Arg Arg Pro Ser Asp Arg Glu Leu Ser Glu Pro Met Glu Phe Gln Tyr
                275   280   285
Leu Pro Asp Thr Asp Asp Arg His Arg Ile Glu Glu Lys Arg Lys Arg
        290   295   300
Thr Tyr Glu Thr Phe Lys Ser Ile Met Lys Lys Ser Pro Phe Ser Gly
305   310   315   320
Pro Thr Asp Pro Arg Pro Pro Pro Arg Arg Ile Ala Val Pro Ser Arg
                325   330   335
Ser Ser Ala Ser Val Pro Lys Pro Ala Pro Gln Pro Tyr Pro Phe Thr
                340   345   350
Ser Ser Leu Ser Thr Ile Asn Tyr Asp Glu Phe Pro Thr Met Val Phe
        355   360   365
Pro Ser Gly Gln Ile Ser Gln Ala Ser Ala Leu Ala Pro Ala Pro Pro
370   375   380
Gln Val Leu Pro Gln Ala Pro Ala Pro Ala Pro Ala Pro Ala Met Val
385   390   395   400
Ser Ala Leu Ala Gln Ala Pro Ala Pro Val Pro Val Leu Ala Pro Gly
                405   410   415
Pro Pro Gln Ala Val Ala Pro Pro Ala Pro Lys Pro Thr Gln Ala Gly
                420   425   430
Glu Gly Thr Leu Ser Glu Ala Leu Leu Gln Leu Gln Phe Asp Asp Glu
        435   440   445
Asp Leu Gly Ala Leu Leu Gly Asn Ser Thr Asp Pro Ala Val Phe Thr
        450   455   460
Asp Leu Ala Ser Val Asp Asn Ser Glu Phe Gln Gln Leu Leu Asn Gln
465   470   475   480
Gly Ile Pro Val Ala Pro His Thr Thr Glu Pro Met Leu Met Glu Tyr
                485   490   495
Pro Glu Ala Ile Thr Arg Leu Val Thr Gly Ala Gln Arg Pro Pro Asp
                500   505   510
Pro Ala Pro Ala Pro Leu Gly Ala Pro Gly Leu Pro Asn Gly Leu Leu
        515   520   525
Ser Gly Asp Glu Asp Phe Ser Ser Ile Ala Asp Met Asp Phe Ser Ala
        530   535   540
Leu Leu Ser Gln Ile Ser Ser Leu Asp Pro Pro Val Ala Thr Met Val
545   550   555   560

193

```
Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu
              565             570                 575
Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly
          580             585                 590
Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr
          595             600             605
Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr
    610             615             620
Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His
625             630             635             640
Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr
              645             650             655
Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys
              660             665             670
Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp
          675             680             685
Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr
    690             695             700
Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile
705             710             715             720
Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln
              725             730             735
Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val
              740             745             750
Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys
          755             760             765
Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr
    770             775             780
Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
785             790             795
```

<210> 142

<211> 2394

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-NFkappaB fusion

<220>

<221> CDS

<222> (1)..(2391)


```
<400> 142
atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg      48
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc      96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20                  25                  30
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc     144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
```

```
                  35                        40                          45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc       192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
      50                        55                          60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag       240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                        70                          75                  80
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag       288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                  85                        90                          95
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag       336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                      100                       105                         110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc       384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
                  115                       120                         125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac       432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130                       135                         140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac       480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                       150                         155                 160
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc       528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                      165                       170                         175
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc       576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
                  180                       185                         190
ccc gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg       624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
                  195                       200                         205
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc       672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                       215                         220
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc       720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                       230                         235                 240
gga ctc aga tct cga gcc atg gac gaa ctg ttc ccc ctc atc ttc ccg       768
Gly Leu Arg Ser Arg Ala Met Asp Glu Leu Phe Pro Leu Ile Phe Pro
                      245                       250                         255
gca gag cca gcc cag gcc tct ggc ccc tat gtg gag atc att gag cag       816
Ala Glu Pro Ala Gln Ala Ser Gly Pro Tyr Val Glu Ile Ile Glu Gln
                  260                       265                         270
ccc aag cag cgg ggc atg cgc ttc cgc tac aag tgc gag ggg cgc tcc       864
Pro Lys Gln Arg Gly Met Arg Phe Arg Tyr Lys Cys Glu Gly Arg Ser
                  275                       280                         285
gcg ggc agc atc cca ggc gag agg agc aca gat acc acc aag acc cac       912
Ala Gly Ser Ile Pro Gly Glu Arg Ser Thr Asp Thr Thr Lys Thr His
    290                       295                         300
ccc acc atc aag atc aat ggc tac aca gga cca ggg aca gtg cgc atc       960
Pro Thr Ile Lys Ile Asn Gly Tyr Thr Gly Pro Gly Thr Val Arg Ile
305                       310                         315                 320
tcc ctg gtc acc aag gac cct cct cac cgg cct cac ccc cac gag ctt       1008
Ser Leu Val Thr Lys Asp Pro Pro His Arg Pro His Pro His Glu Leu
                  325                       330                         335
gta gga aag gac tgc cgg gat ggc ttc tat gag gct gag ctc tgc ccg       1056
Val Gly Lys Asp Cys Arg Asp Gly Phe Tyr Glu Ala Glu Leu Cys Pro
                  340                       345                         350
gac cgc tgc atc cac agt ttc cag aac ctg gga atc cag tgt gtg aag       1104
Asp Arg Cys Ile His Ser Phe Gln Asn Leu Gly Ile Gln Cys Val Lys
    355                       360                         365
aag cgg gac ctg gag cag gct atc agt cag cgc atc cag acc aac aac       1152
Lys Arg Asp Leu Glu Gln Ala Ile Ser Gln Arg Ile Gln Thr Asn Asn
```

195

```
aac ccc ttc caa gtt cct ata gaa gag cag cgt ggg gac tac gac ctg    1200
Asn Pro Phe Gln Val Pro Ile Glu Glu Gln Arg Gly Asp Tyr Asp Leu
385                    390                    395                    400
aat gct gtg cgg ctc tgc ttc cag gtg aca gtg cgg gac cca tca ggc    1248
Asn Ala Val Arg Leu Cys Phe Gln Val Thr Val Arg Asp Pro Ser Gly
                      405                    410                    415
agg ccc ctc cgc ctg ccg cct gtc ctt cct cat ccc atc ttt gac aat    1296
Arg Pro Leu Arg Leu Pro Pro Val Leu Pro His Pro Ile Phe Asp Asn
                      420                    425                    430
cgt gcc ccc aac act gcc gag ctc aag atc tgc cga gtg aac cga aac    1344
Arg Ala Pro Asn Thr Ala Glu Leu Lys Ile Cys Arg Val Asn Arg Asn
                      435                    440                    445
tct ggc agc tgc ctc ggt ggg gat gag atc ttc cta ctg tgt gac aag    1392
Ser Gly Ser Cys Leu Gly Gly Asp Glu Ile Phe Leu Leu Cys Asp Lys
                      450                    455                    460
gtg cag aaa gag gac att gag gtg tat ttc acg gga cca ggc tgg gag    1440
Val Gln Lys Glu Asp Ile Glu Val Tyr Phe Thr Gly Pro Gly Trp Glu
465                    470                    475                    480
gcc cga ggc tcc ttt tcg caa gct gat gtg cac cga caa gtg gcc att    1488
Ala Arg Gly Ser Phe Ser Gln Ala Asp Val His Arg Gln Val Ala Ile
                      485                    490                    495
gtg ttc cgg acc cct ccc tac gca gac ccc agc ctg cag gct cct gtg    1536
Val Phe Arg Thr Pro Pro Tyr Ala Asp Pro Ser Leu Gln Ala Pro Val
                      500                    505                    510
cgt gtc tcc atg cag ctg cgg cgg cct tcc gac cgg gag ctc agt gag    1584
Arg Val Ser Met Gln Leu Arg Arg Pro Ser Asp Arg Glu Leu Ser Glu
                      515                    520                    525
ccc atg gaa ttc cag tac ctg cca gat aca gac gat cgt cac cgg att    1632
Pro Met Glu Phe Gln Tyr Leu Pro Asp Thr Asp Asp Arg His Arg Ile
                      530                    535                    540
gag gag aaa cgt aaa agg aca tat gag acc ttc aag agc atc atg aag    1680
Glu Glu Lys Arg Lys Arg Thr Tyr Glu Thr Phe Lys Ser Ile Met Lys
545                    550                    555                    560
aag agt cct ttc agc gga ccc acc gac ccc cgg cct cca cct cga cgc    1728
Lys Ser Pro Phe Ser Gly Pro Thr Asp Pro Arg Pro Pro Pro Arg Arg
                      565                    570                    575
att gct gtg cct tcc cgc agc tca gct tct gtc ccc aag cca gca ccc    1776
Ile Ala Val Pro Ser Arg Ser Ser Ala Ser Val Pro Lys Pro Ala Pro
                      580                    585                    590
cag ccc tat ccc ttt acg tca tcc ctg agc acc atc aac tat gat gag    1824
Gln Pro Tyr Pro Phe Thr Ser Ser Leu Ser Thr Ile Asn Tyr Asp Glu
                      595                    600                    605
ttt ccc acc atg gtg ttt cct tct ggg cag atc agc cag gcc tcg gcc    1872
Phe Pro Thr Met Val Phe Pro Ser Gly Gln Ile Ser Gln Ala Ser Ala
610                    615                    620
ttg gcc ccg gcc cct ccc caa gtc ctg ccc cag gct cca gcc cct gcc    1920
Leu Ala Pro Ala Pro Pro Gln Val Leu Pro Gln Ala Pro Ala Pro Ala
625                    630                    635                    640
cct gct cca gcc atg gta tca gct ctg gcc cag gcc cca gcc cct gtc    1968
Pro Ala Pro Ala Met Val Ser Ala Leu Ala Gln Ala Pro Ala Pro Val
                      645                    650                    655
cca gtc cta gcc cca ggc cct cct cag gct gtg gcc cca cct gcc ccc    2016
Pro Val Leu Ala Pro Gly Pro Pro Gln Ala Val Ala Pro Pro Ala Pro
                      660                    665                    670
aag ccc acc cag gct ggg gaa gga acg ctg tca gag gcc ctg ctg cag    2064
Lys Pro Thr Gln Ala Gly Glu Gly Thr Leu Ser Glu Ala Leu Leu Gln
                      675                    680                    685
ctg cag ttt gat gat gaa gac ctg ggg gcc ttg ctt ggc aac agc aca    2112
Leu Gln Phe Asp Asp Glu Asp Leu Gly Ala Leu Leu Gly Asn Ser Thr
                      690                    695                    700
gac cca gct gtg ttc aca gac ctg gca tcc gtc gac aac tcc gag ttt    2160
Asp Pro Ala Val Phe Thr Asp Leu Ala Ser Val Asp Asn Ser Glu Phe
```

```
      705                     710                     715                     720
cag cag ctg ctg aac cag ggc ata cct gtg gcc ccc cac aca act gag      2208
Gln Gln Leu Leu Asn Gln Gly Ile Pro Val Ala Pro His Thr Thr Glu
                    725                     730                     735
ccc atg ctg atg gag tac cct gag gct ata act cgc cta gtg aca ggg      2256
Pro Met Leu Met Glu Tyr Pro Glu Ala Ile Thr Arg Leu Val Thr Gly
                740                     745                     750
gcc cag agg ccc ccc gac cca gct cct gct cca ctg ggg gcc ccg ggg      2304
Ala Gln Arg Pro Pro Asp Pro Ala Pro Ala Pro Leu Gly Ala Pro Gly
            755                     760                     765
ctc ccc aat ggc ctc ctt tca gga gat gaa gac ttc tcc tcc att gcg      2352
Leu Pro Asn Gly Leu Leu Ser Gly Asp Glu Asp Phe Ser Ser Ile Ala
        770                     775                     780
gac atg gac ttc tca gcc ctg ctg agt cag atc agc tcc taa            2394
Asp Met Asp Phe Ser Ala Leu Leu Ser Gln Ile Ser Ser
785                     790                     795
```

<210> 143

<211> 797

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-NFkappaB fusion


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<400> 143
Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1               5                   10                  15
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                20                  25                  30
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
            35                  40                  45
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
        50                  55                  60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
65                  70                  75                  80
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85                  90                  95
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100                 105                 110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
        115                 120                 125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130                 135                 140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
145                 150                 155                 160
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165                 170                 175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
            180                 185                 190
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195                 200                 205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
    210                 215                 220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
225                 230                 235                 240
```

197

Gly Leu Arg Ser Arg Ala Met Asp Glu Leu Phe Pro Leu Ile Phe Pro
            245   250   255
Ala Glu Pro Ala Gln Ala Ser Gly Pro Tyr Val Glu Ile Ile Glu Gln
            260   265   270
Pro Lys Gln Arg Gly Met Arg Phe Arg Tyr Lys Cys Glu Gly Arg Ser
        275   280   285
Ala Gly Ser Ile Pro Gly Glu Arg Ser Thr Asp Thr Thr Lys Thr His
        290   295   300
Pro Thr Ile Lys Ile Asn Gly Tyr Thr Gly Pro Gly Thr Val Arg Ile
305   310   315   320
Ser Leu Val Thr Lys Asp Pro Pro His Arg Pro His Pro His Glu Leu
            325   330   335
Val Gly Lys Asp Cys Arg Asp Gly Phe Tyr Glu Ala Glu Leu Cys Pro
            340   345   350
Asp Arg Cys Ile His Ser Phe Gln Asn Leu Gly Ile Gln Cys Val Lys
        355   360   365
Lys Arg Asp Leu Glu Gln Ala Ile Ser Gln Arg Ile Gln Thr Asn Asn
    370   375   380
Asn Pro Phe Gln Val Pro Ile Glu Glu Gln Arg Gly Asp Tyr Asp Leu
385   390   395   400
Asn Ala Val Arg Leu Cys Phe Gln Val Thr Val Arg Asp Pro Ser Gly
            405   410   415
Arg Pro Leu Arg Leu Pro Pro Val Leu Pro His Pro Ile Phe Asp Asn
            420   425   430
Arg Ala Pro Asn Thr Ala Glu Leu Lys Ile Cys Arg Val Asn Arg Asn
        435   440   445
Ser Gly Ser Cys Leu Gly Gly Asp Glu Ile Phe Leu Leu Cys Asp Lys
    450   455   460
Val Gln Lys Glu Asp Ile Glu Val Tyr Phe Thr Gly Pro Gly Trp Glu
465   470   475   480
Ala Arg Gly Ser Phe Ser Gln Ala Asp Val His Arg Gln Val Ala Ile
            485   490   495
Val Phe Arg Thr Pro Pro Tyr Ala Asp Pro Ser Leu Gln Ala Pro Val
        500   505   510
Arg Val Ser Met Gln Leu Arg Arg Pro Ser Asp Arg Glu Leu Ser Glu
        515   520   525
Pro Met Glu Phe Gln Tyr Leu Pro Asp Thr Asp Asp Arg His Arg Ile
    530   535   540
Glu Glu Lys Arg Lys Arg Thr Tyr Glu Thr Phe Lys Ser Ile Met Lys
545   550   555   560
Lys Ser Pro Phe Ser Gly Pro Thr Asp Pro Arg Pro Pro Pro Arg Arg
            565   570   575
Ile Ala Val Pro Ser Arg Ser Ser Ala Ser Val Pro Lys Pro Ala Pro
            580   585   590
Gln Pro Tyr Pro Phe Thr Ser Ser Leu Ser Thr Ile Asn Tyr Asp Glu
        595   600   605
Phe Pro Thr Met Val Phe Pro Ser Gly Gln Ile Ser Gln Ala Ser Ala
    610   615   620
Leu Ala Pro Ala Pro Pro Gln Val Leu Pro Gln Ala Pro Ala Pro Ala
625   630   635   640
Pro Ala Pro Ala Met Val Ser Ala Leu Ala Gln Ala Pro Ala Pro Val
            645   650   655
Pro Val Leu Ala Pro Gly Pro Pro Gln Ala Val Ala Pro Pro Ala Pro
            660   665   670
Lys Pro Thr Gln Ala Gly Glu Gly Thr Leu Ser Glu Ala Leu Leu Gln
        675   680   685
Leu Gln Phe Asp Asp Glu Asp Leu Gly Ala Leu Leu Gly Asn Ser Thr
    690   695   700
Asp Pro Ala Val Phe Thr Asp Leu Ala Ser Val Asp Asn Ser Glu Phe
705   710   715   720
Gln Gln Leu Leu Asn Gln Gly Ile Pro Val Ala Pro His Thr Thr Glu
            725   730   735
Pro Met Leu Met Glu Tyr Pro Glu Ala Ile Thr Arg Leu Val Thr Gly

198

```
                  740                     745                     750
Ala Gln Arg Pro Pro Asp Pro Ala Pro Ala Pro Leu Gly Ala Pro Gly
         755                     760                     765
Leu Pro Asn Gly Leu Leu Ser Gly Asp Glu Asp Phe Ser Ser Ile Ala
         770                     775                     780
Asp Met Asp Phe Ser Ala Leu Leu Ser Gln Ile Ser Ser
785                     790                     795
```